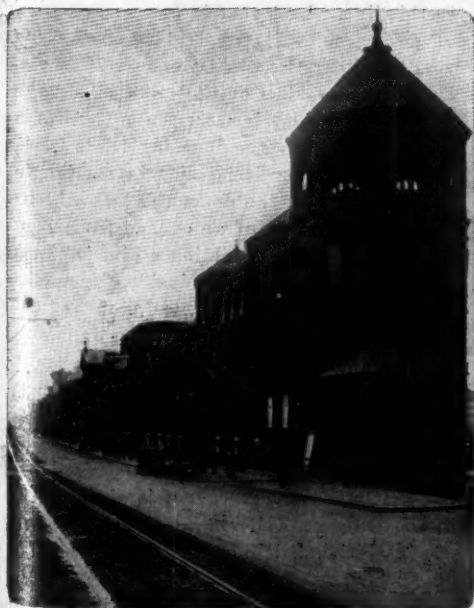


MOTOR AGE

NEW ENGLAND'S SHOW A BOWER OF BEAUTY



JAPANESE EFFECT WHICH IS CARRIED OUT IN THE NEW ENGLAND SHOW IN BOSTON



MECHANICS' BUILDING IN BOSTON

BOSTON, MASS., March 7—Boston's annual show was ushered in this evening with a westerly wind that drove away all the hovering clouds which were threatening to deluge the city earlier in the day. As a result of the stiff breeze the cars came out, and with a bit of a moon to throw partial light on the Back bay, everything from a weather standpoint was delightful for the opening night. Thousands took advantage of the delightful conditions, wending their way to the hall long before the advertised time to open the doors. As they stood about wondering why the doors were not opened especially for their benefit, they saw the gleam of lights from within and this made them all the more impatient. Once the doors were opened it was like a flock of people fleeing from a panic, only in this case they rushed indoors



TAKING CARS INTO THE HALL



BOSTON'S BIG SHOW—LOOKING TOWARD THE STAGE AND ITS DECORATIONS

instead of out, many of them wondering what they would see and how much of the many things would escape their notice. There were no guides fashioned after the personally-conducted tour plan, that is, not this evening. Had there been any such they would have been rendered useless in the throng. The guide might get as far as stating that there were 250 dealers and manufacturers represented here; that the floor space was some 100,000 square feet; that ninety different makes of motor cars were shown; all this might be said outside, but to start in and try to explain anything within the building would have been an impossibility. The disinterested mob to-night numbered about 35,000.

There are three features this year that stand out prominently as compared with a year ago. First there are more six-cylinder models. There were several a year ago, but nothing compared with this show. The makers who had six-cylinder cars under way a year ago did not send their models to New England because they seemed to feel they did not have enough to supply the demand and that this section, so conservative, would not take the new idea very readily. Those that did, however, profited by their forethought. The best idea of the prevalence of the sixes this year over last may be gleaned by noting that when a visitor a year ago went to the show and asked about a six he had to go all over the hall to find one or two. This year while looking at one there may be seen another behind or across the aisle, here, there, everywhere.

Then there are the roadsters. Boston had a few of them a year ago, but there was no such notable variety as this time. Instead the makers paid more attention to the limousines and landaulets, filling their spaces with them. There were a few

roadsters scattered about but there was such a similarity to their appearance that they lost their individuality. Not so this year. Each space has its roadster.

The town car really makes its appearance for the first time at a Boston show this year. There was something suggestive of this style at other shows in the electric lines. But for a distinctly new feature the gasoline town car is the one thing in the show that will be given some attention. And yet, as in former years, history is going to repeat itself, for there are not many of them. It is like the locating of the six-cylinder machines last year. The town cars are here, but not so numerous as to make them at all monotonous. That will be next year when about every company will have added this sort of vehicle to its line. While on the topics of new things and closed cars, there is a model at the Peerless booth that has not been shown previously. It is called a Berlin body. It is a sort of double limousine. Not only is the part where the owner and his guests ride enclosed in wood, but the front seat, where the driver and anyone beside him may be, is also housed in with wooden sides and doors, though relatively smaller than the rear section. For real winter motoring in a cold climate it looks a perfect car. There is a small leather hood in front to lower in stormy weather when the front window is opened, but it only adds to the attractiveness of the car. It is mounted on the 30-horsepower chassis. There is something nearly similar to be noticed on a Welch chassis.

Another feature introduced this year at the show, and something original because no other show manager seemed to think of it, or if he did found the space not available, is the model repair shop and school. This is sure to make a hit, for many peo-

ple will get free instructions in the art of motoring during the week. This has been accomplished by having the Boston Y. M. C. A. motoring school remove its plant practically entire from the White garage to Mechanics' building. The regular classes will be continued during the week at the show building and arrangements have been made for the free entrance of the regular scholars. Any visitors at the show will be invited to attend the lectures and gain a knowledge of how the school is conducted. A large section of the basement has been set off for a schoolroom and near by are the motors, etc. As the Boston Y. M. C. A. school antedates all others, its work is quite complete.

The model repair shop was installed after a competition for a prize offered by the dealers' association for plans of such a place. This was won by H. P. Faxon, of Brookline, and then he was commissioned to fit the shop up. It contains all the most up-to-date machinery for repairing and many of the appliances are in full operation. This affords ample opportunity for anyone to ask questions and see how things are done in a practical way. These two innovations were brought about because the motor boats are not in the show this year and therefore there was some good space available in the basement. In fact the absence of the boats is most marked, for each year when anyone went down in the basement there was such a splendid line of craft that they overshadowed everything else there and took the attention from even the motor cars above, weaning the thoughts of a visitor from dreams of shady country lanes to the salt sea breezes of the ocean. However, not to be altogether out of it, there are by actual count five boats in the basement. But they are there more to display engines than boats.

Show decorations are something that interest people, and Boston has earned the reputation of putting out some clever ideas in this line. Last year it was a suggestion of spring with its apple blossoms. This year Manager Campbell transports his visitors to the realms of the mikado, for the decorative scheme is after the pattern of a Japanese arbor. The building lends itself to this effect, for it is built in a triangle and once within the doors the hall widens out like the leaves of an opened fan. Even before entering the building a hint is given of what may be expected inside, for across the entrance extends a large Japanese temple gate, beneath which swings a Japanese lantern of gigantic size. Along the front of the building are also strung fancy Japanese lanterns, while another gate marks the entrance to Grand hall. In the evening these lanterns are illuminated by electric bulbs and the effect is picturesque in the extreme. Extending from the door of Exhibition hall down the entire length of that part of the building is an arch resting upon columns on either side. The arch has a frame of wood, but this is al-

most entirely hidden by vines and greenery and by thousands of brilliantly-colored blooms. The effect is that of a wistaria arbor in full bloom, the vivid green of the wistaria leaves making a startling contrast to the many-colored blossoms. Brilliant purples, delicate pinks and the other colors of the natural wistaria have been copied with the most natural effect, and these blossoms depend in festoons from the archway overhead. Thousands of small electric lights have been intertwined among the wistaria and when the current is turned on the effect excels that of any decorations ever used before in the hall.

To carry out further the garden idea derived from the wistaria arch or arbor, the exhibition spaces on either side of the main aisle, and throughout the building for that matter, have been carpeted with a grass green matting, while between the spaces, to serve as dividing lines, have been placed hedges of growing privet, such as may be seen in many gardens. An enormous number of bushes of privet was required for this work, but Manager Campbell was able to secure as much as he needed for the purpose.

The centerpiece of the Grand hall decorations is a fountain surrounded by a rockery and spouting eight jets of water. Above the fountains are tall trees agreeably grouped at the intersection of the two main aisles, which divide the floor outside the balconies into four equal parts. Running lengthwise through the exhibition spaces are large Japanese gates such as may be seen along the roads in Japan, with their curiously curved lintels and their slanting posts. Beneath the arch formed by these gates are hung the white and gold signs of the exhibitors. As in the other hall, privet hedges separate the spaces, and the floor, with the exception of the aisles, is covered by green matting. The stage forms a background for the whole scene. At the back of the stage is a wide painted drop upon which is depicted a high snow-capped mountain, a lake and a village. In the foreground appear a stream, bridge and green fields. Two monster dragons are also added as side pieces.

To conceal the unsightly rafters high up above the floor, and yet to arrange the decorations in such a manner as not to interfere with the ventilation, was a difficult task. One thing is certain, and that is, a most striking decorative effect has been secured, the great roof space being made to resemble an enormous Japanese flag. In the center over the fountain, is placed a great chrysanthemum in gilt, and radiating from it in all directions are long streamers of red, while underneath has been placed a pure white covering of bunting. At first it was planned to cover in the roof solid with bunting, but it was found that if this were done, the ventilation would be very bad.

Two gasoline and one electric cars make their appearance for the first time at this show, not having been seen in New York and Chicago. They are Massachusetts products. The gasoline cars

are the Stilson and the Springfield and the electric is the Bailey. The last named is made in Amesbury, the home of so many body builders and carriage makers for years. The name Bailey has been identified with this work for half a century and 3 years ago the company turned its attention to making an electric carriage. Experiments of all sorts were tried until finally it hit upon what it conceived to be the right one and it has a space at the show where two models are exhibited. The makers believe it to be a perfect type for city and suburban use. The victoria is claimed to be the lightest electric ever made of its type and size. The weight is carried low. The frame, while gracefully curved, is in effect a drop frame. The battery is hung by three-point suspension under the floor and is easily accessible. The motor is of special design, 60 volts, and of high efficiency. Light weight in this detail is sacrificed to durability. The motor is placed well in the rear so that the entire space under the seat is available for stowage. Driving mechanism is by Morse silent chain to countershaft and by double roller chain to the rear wheels. The steering gear is a notable feature. It is of a lever type and in appearance much like a common wheel steering column. The wheel is D-shaped and the entire column swings either way at the movement of the hand. No vibration or wheel impulse is transmitted to the hand. The speed control lever is mounted on top of the wheel in much the same manner that the spark lever is mounted in most gasoline cars. It may be worked by a finger of either hand. Its position is always in sight. This controller is interlocking; first, with the switch, which connects the battery with the motor so that it cannot be turned on, unless the controller is at the

neutral point; second, with the brake, so that if the brake is put on, the power is automatically thrown off. The brakes are three: two on the rear wheels and one on the motor. They are operated by one foot lever and so arranged that the rotation of the motor is checked at the same time that the momentum of the vehicle is stopped. This avoids great strains on the motor mechanism, chains and bearings. An electric horn is inconspicuously placed and is operated by a push button at the wheel. The axles are Bailey pivot type. The wheels are of the artillery type, chariot style, but of improved design, being stronger in the hub, lighter by the absence of wooden rims, and more easily repaired.

The Stilson, made in Pittsburg, comes out under the caption "an absolutely noiseless six-cylinder 60-horsepower car." The six cylinders are vertical, cast separately, water-cooled, cast waterjackets, with a bore of $4\frac{1}{8}$ inches and a stroke of $5\frac{1}{2}$ inches. The horsepower is 50-60. The ignition is jump spark and storage battery and high-tension magneto are used. The water pump is centrifugal, geared direct. The oiling device is a positive feed mechanical oiler, gear-driven. The wheels are 34 inches. The gasoline tank is carried on the rear of frame and holds 23 gallons. The valves are interchangeable and of the mushroom type on opposite sides. The control is spark and throttle on top of the steering wheel. The transmission is sliding gear, selective type. The rear axle has a bevel gear drive of the floating type clutch-driven hub, and ball bearings throughout. The frame is pressed steel cold rolled, with sub-frame to carry the entire power plant. The brakes comprise footbrakes on the rear hub, emergency, internal expansion in the drum on the rear wheel, bronze against steel. Semi-



GENERAL VIEW OF INTERIOR OF MECHANICS' HALL, BOSTON



GENERAL VIEW OF BUFFALO SHOW IN CONVENTION HALL

elliptic springs are used throughout and the wheelbase is 120 inches. The car weighs 2,750 pounds.

The Springfield is made in the city of that name and is turned out in touring car and roadster style. They present a number of high-class features. The runabout carries seats for either two, three or four people, all the seats being large and comfortable. These cars are put out with 36-inch wheels, with quick detachable rims and 4-inch tires, with two complete systems of ignition, high-tension magneto and single coil with distributor. The transmission is of the three-speed selective type, direct on the third speed. The front axle sets well forward, giving 114-inch wheelbase, and makes a very easy riding and easy steering car. The touring car has a motor of 30 horsepower, with three-speed selective type transmission, 34-inch wheels and a wheelbase of 109 inches. The body, seating five, is of the straight-lined type, being made of aluminum throughout.

The entire floors of the main and Grand halls are devoted to the motor cars this year. Other concerns that usually had spaces on the main floor have been placed among the accessories so it left more room. This has resulted in not having to place cars in the balcony of the main hall as heretofore. To go through the different exhibits and enumerate just what each one shows would be repeating what was seen at New York and Chicago. There are the roadsters, touring

cars, limousines, etc., with polished chassis in each space. Some have more than others, of course. For instance the Thomas, Pierce, Peerless, White, Winton and a few others have very big sections in which they show quite a varied collection of splendid machines. On entering the main door one comes on the Bailey electrics and one Columbia car, the Electric Vehicle Co. having started in work again a few days ago, so one of its 28-horsepower models is shown. The De Luxe, Kisselkar, Fiat and Locomobile follow in that order along the row. A door separates the latter from the Atlas, Baker electric, Springfield, Renault and Rambler booths that complete the side of the building. Turning around and starting back



the Packard, Cadillac, Mora, Wayne, Rainier, Ford and Maxwell take the other side of the aisle. On the next aisle the Premier, Reo, National, Matheson and Lozier have the spaces and at the head of the aisle the Marmon cars rest snugly where they stare every visitor going into the other hall. In a similar sort of space the Franklins are located. The Thomas has the largest space in this part of the building where it shows both Flyers, Detroit, the Sixty-Six special, town car, chassis, etc. The Studebaker, Stilson, Pullman, Pennsylvania and Glide follow along and on the other side are the Oldsmobile, Overland, Simplex, Lane, Kiblinger. The Northern also occupies a prominent place.

In the other hall the main spaces in the quadrangle are taken by the White, Knox, Winton, Royal Tourist, Peerless, Pierce Arrow, Aerocar, Imperial, Autocar, Corbin, Berliet and Stoddard-Dayton. In the spaces flanking the wall are the American, Marion, Pope, Allen-Kingston, Elmore, Shawmut, Mitchell, Stevens-Duryea, Welch, Hotchkiss, Stearns and Grout. On the stage the Stanley cars take half the space. The other half goes to the Chadwick and Speedwell. The Bay State Forty is in the basement. So are the Waltham and Pierce-Racine. There is a fine line of commercial trucks down there, the Rapid and Studebaker having an extra fine display.

Upstairs the accessory men have plenty of room this year. But they take it all. There is a better display of tires than has ever been seen at a show here previously.

EXHIBITORS OF MOTOR CARS, MOTOR CYCLES AND ACCESSORIES

MOTOR CARS

Stanley Motor Carriage Co.—Stanley
Curtis-Hawkins Co.—Grout, Chadwick, Babcock electric
George J. Dunham—Royal Tourist
Winton Motor Carriage Co.—Winton
White Co.—White
Reed-Underhill Co.—Knox
Corbin Mfg. Co.—Corbin
Park Square Auto Station—Berliet, Stoddard-Dayton
Peerless Motor Car Co.—Peerless
Fred S. Smith—Autocar, Apperson, Walter
J. W. Maguire Co.—Pierce Great Arrow
George H. Lowe—Imperial
J. W. Bowman Co.—Stevens-Duryea
Mills-Kennedy Co.—Welch, Springfield
S. R. Bailey & Co.—Bailey electric
Morgan B. Kent—Hotchkiss, Stearns
W. M. Jenkins & Co.—Mitchell
Shawmut Motor Co.—Shawmut
Dodge Motor Vehicle Co.—Pope
Allen-Kingston Motor Co.—Mercedes, Allen-Kingston
F. R. Parker & Co.—Elmore
W. A. Frederick Co.—American, Overland, Marlon
Franklin Automobile Co.—Franklin
F. E. Wing—Marmon
Thomas B. Jeffery Co.—Rambler
Harry Fosdick Co.—Atlas, Springfield, Baker electric
Locomobile Co. of America—Locomobile
Maxwell-Briscoe-Boston Co.—Maxwell

Columbia Motor Vehicle Co.—Columbia
Ford Motor Co.—Ford
Morrison-Price Co.—Rainier, Wayne, Mora
A. T. Fuller—Packard, Cadillac
Boston Motor Co.—Acme
Matheson Co. of Boston—Matheson
H. C. and C. D. Castle—Lozier
Linscott Motor Co.—National, Reo
Premier Boston Depot—Premier
Edward S. Clark—Clark
Whitten-Gillmore Co.—Thomas
F. E. Randall Co.—Pullman, Stilson, Pennsylvania
Algonquin Motor Car Co.—Oldsmobile, Columbus electric
Lane Sales Co.—Lane
Oakland Motor Car Co.—Oakland
K. A. Skinner—De Dion, Brouhot
South End Car Co.—Brush
Northern Motor Car Co.—Northern
Palmer & Singer Co.—P. & S., Simplex
D. P. Nichols & Co.—Frayer-Miller
Crown Motor Car Co.—Glide, Crown buggy
A. B. Bangs—Viking
Ferd. F. French—Schacht
Waltham Mfg. Co.—Waltham-Orient
Butler Motor Car Co.—Rapid, Cleveland, Pierce Racine
Charles A. Eaton—Lambert
R. C. Lewis—Lewis
H. C. Stratton—Kisselkar, Car de Luxe, American Mercedes
Dragon Motor Co.—Dragon
Flat Co.—Flat
Renault Selling Branch—Renault

MOTOR CYCLES

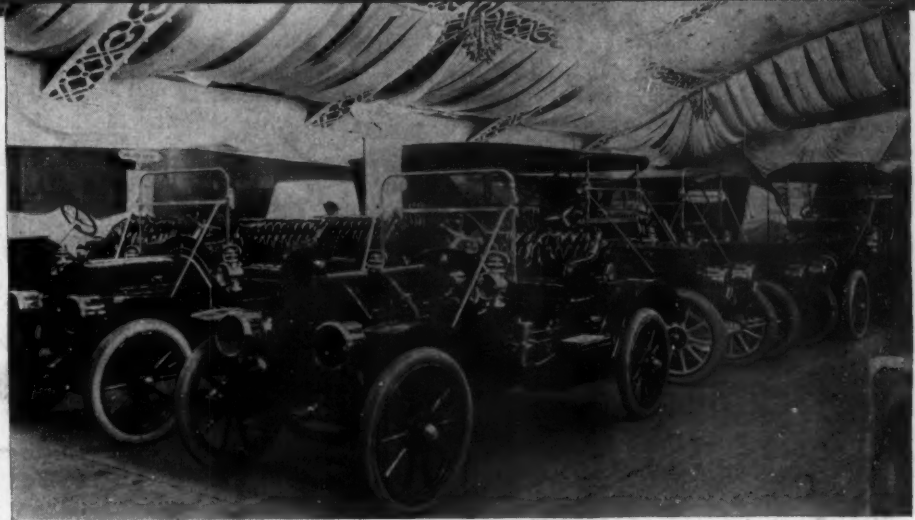
Crouch Motor Co.—Crouch
Hendee Mfg. Co.—Indian
Light Mfg. and Foundry Co.—Light
Ovington Motor Co.—F. N.
American Motor Co.—Marsh
Reliance Motor Cycle Co.—Reliance
Merkel Motor Co.—Merkel
Reading Standard Co.—R. S.
Aurora Automatic Machine Co.—Thor

ACCESSORIES

Teel Mfg. Co.
N. E. Lighting Co.
William Cramp & Sons Co.
Moore-Smith Co.
Norton Grinding Co.
Chandler & Farguhar Co.
Coates Clipper Mfg. Co.
Fuller & Sullivan
American Rotary Motor Co.
Judson L. Thompson Co.
West & Dodge
P. A. Murray & Co.
Automobile Utilities Co.
Columbia Vehicle Tire and Top Co.
National Valgrinock Co.
Arthur S. Gunn
F. S. Sutherland
Globe Optical Co.
C. J. Downing
Underhay Oil Co.
Eagle Oil and Supply Co.
Dover Stamping and Mfg. Co.
Maryland Casualty Co.
Century Optical Co.
Non-Explosive Safety Naphtha Container Co.
Soldierline Co.

SIXTH ANNUAL SHOW IN BUFFALO OPENS

BUFFALO, N. Y., March 10—The sixth annual Buffalo show conducted under the auspices of the Automobile Club of Buffalo and the Automobile Trade Association, of this city, opened in splendid fashion in Convention hall here last night. The attendance was excellent and those in charge of the exhibition were in fine spirits. No marked formality was observed at the opening, but much enthusiasm, interspersed with din caused by many horns, reigned. When President W. H. Hotchkiss, of the American Automobile Association, entered the hall, accompanied by President Frank B. Hower, of the Buffalo Automobile Club, and President J. A. Cramer, of the trade association, more than 200 horns tooted a stormy salute. The finest show of the kind ever seen in Buffalo was then declared open. Convention hall is superbly decorated for the week's exhibition. The ceiling is canopied in white and pale blue bunting with gold star decorations, the whole to represent a clear sky on a summer night. The walls are also hung in the same soft colors. From the center of the roof falls a shower of golden light showing up every exhibit as though it stood in the glare of the noon-day sun. Strings of pearly lights, with clusters between, thread the roof's sloping sides. From end to end an uninterrupted view of the exhibition can be had, no disfiguring signs or price lists being permitted. Instead, at each exhibit is a standard pole in yellow with blue trimmings. Across the top is the name of the



AT BUFFALO—SECTION OF THE SHOW

exhibitor, and below hangs a blue silk banner with the name of the car inscribed in gold lettering. Arrangements for the show were made by the officers of the Automobile Trade Association.

Could Convention hall afford half as much more space again as it does, it would have been filled, owing to the demand made by exhibitors. Not every exhibitor was able to place as many models as he wished, as big touring cars and commercial wagons leave but little room for the trim roadsters and dainty runabouts that, too, claim attention. Following is the list of exhibitors:

Maxwell-Briscoe Buffalo Co.
E. E. Denniston
Iroquois Rubber Co.
John W. Frey
Buffalo Motor Car Co.

Co-operative Automobile Co.
Poppenberg Auto. Co.
E. R. Thomas Motor Co.
G. N. Pierce Co.
Imperial Motor Co.
Buffalo Automobile Exchange
Brunn Carriage Mfg. Co.
J. A. Cramer
Centaur Motor Co.
Linn & Lewis
American Leatherette Co.
United Spring Co.
Jaynes Auto. Supply Co.
Empire State Tire Co.
Chief Mfg. Co.
Babcock Electric Carriage Co.
D. H. Lewis
Neal, Clark & Neall.
Knoll & Turgeon
W. F. Kendt
C. E. Miller
Walter Hayes
Meyer Carriage Co.
James G. Barclay
Harry Brainard
Harris, E. Newton
Louis Engler, Jr.
International Acheson Graphite Co.

The plan of the hall divides the floor into four aisles, and in addition to the cars there is a complete line of sundries and accessories. Another feature is the extensive showing of polished chassis and polished motor cycles, and the big display by the American Leatherette Co.

The Pierce exhibit of the Great Arrow is attracting much attention, especially its six-cylinder car. The Thomas company has on view nine different styles of cars on four styles of chassis, ranging from the snug little 16-29-horsepower town car to the big six-cylinder flyer. The Brunn Carriage Co. is showing the Pennsylvania and the Pope-Waverley.

Louis Engel, Jr., has some examples of the friction-drive Carterear and last night his stand was surrounded with visitors.

SERIES NOW ON DISPLAY IN NEW ENGLAND'S BIG SHOW

Boston Auto Light Co.
F. H. Howard Co.
Kilgore Mfg. Co.
Charles E. Miller
Randall-Falchney Co.
Dow Tire Co.
William Herbert Jones
Warner Instrument Co.
Never Miss Spark Plug Co.
Acetylene Co.
White and Bagley Co.
Massachusetts Auto Co.
Pettingwell-Andrews Co.
S. F. Bowser & Co.
Pittsfield Spark Coil Co.
Goodyear Tire and Rubber Co.
Jones Speedometer Co.
Diamond Rubber Co.
Gray & Davis
Veeder Mfg. Co.
Flak Rubber Co.
Eastern Carbon Works
Morgan & Wright
Columbia Lubricants Co.
F. Shirley Boyd
Gordon Auto Supply Co.
Parker Mfg. Co.
W. S. Daniels
Gabriel Horn Mfg. Co.
E. T. Ward
John A. Salman & Co.
Hartford Suspension Co.
Empire Tire Co.
G & J Tire Co.
Angier Co.
Witherbee Igniter Co.
Gilbert Mfg. Co.
Atwood Mfg. Co.
Firestone Tire and Rubber Co.

T. F. Russell
Motor Car Specialty Co.
Boston Gear Works
Vacuum Oil Co.
William C. Robinson Sons Co.
L. C. Chase & Co.
Sage's Trunk Depot
J. Frank Cutter
John T. Stanley
Hopewell Brothers
Gilbert & Barker Mfg. Co.
Helmze Electric Co.
Pennsylvania Rubber Co.
N. Y. and N. J. Lubricants Co.
Hartford Rubber Works Co.
A. W. Harris Oil Co.
Connecticut Tel. and Elect. Co.
B. F. Goodrich Co.
N. E. Motor Co.
Leather Tire Goods Co.
National Carbon Co.
Ajax-Grieb Co.
Westchester Appliance Co.
Elite Mfg. Co.
Monitor Distributor Co.
Hillman Auto Supply and Mfg. Co.
A. J. Wilkinson & Co.
Pantasote Co.
Prest-O-Lite Co.
Electric Storage Battery Co.
Hoffecker Co.
Michellin Tire Co.
Commonwealth Rubber Co.
W. J. Connell
Auto Igniter Co.
National Auto Accessory Co.
William J. Smith Co.
Malden Leather Goods Co.
Stackpole Battery Co.

Joseph Dixon Crucible Co.
Whitney Mfg. Co.
Post & Lester Co.
T. Alton Bemus Co.
Consolidated Optical Mfg. Co.
Aetna Life Insurance Co.
Albert Champion Co.
Duncan Robinson
Old Corner Book Store
Voorhees Rubber Co.
H. F. Campbell
George A. Haws
Anderson Spark Plug Co.
J. B. Draper & Co.
Eco Mfg. Co.
Charles F. Kellon
William Nolan
Brown Folding Stool Co.
R. H. Smith Mfg. Co.
Boston Auto Gage Co.
Proctor Supply Co.
J. W. Colgan Co.
F. F. Speare
Automobile School
Nonpareil Brass Co.
Ciglia Shock Preventer Co.
Zegian Bullet Proof Cloth Co.
Ball Bearing Tire Co.
Baldwin & Co.
Melrose Automobile Co.
St. John Rubber Co.
Auto List Publishing Co.
Defiance Chain Co.
Shove & Gage Co.
Walden Mfg. Co.
Alfred Cutler Morse
Duplex Coll Co.
Legnard Bros. Co.
Vim Motor Co.

FIELDS IN SAVANNAH RACES WELL FILLED

SAVANNAH, GA., March 10—Special telegram—On the eve of the greatest road carnival ever known in this country, the Savannah Automobile Club finds itself with ten cars in the 360-mile race for the Savannah challenge trophy to be run next week Thursday; six in the runabout race at 180 miles to be run on Wednesday morning of next week and five in the southern high-power cup, to be run that afternoon. The entries do not close until midnight tonight, so there is a possibility a few more may squeeze in. Since last week a Stearns four in the big race, a Cleveland in the runabout event and the Big Dick Apperson in the third class have been entered. The Imperial has been withdrawn. Yesterday the four-cylinder Stearns was entered by F. Ross Guerrard, of Savannah, in the race for the Savannah challenge trophy, making the third entry from Georgia. This car will be driven by Frank W. Leland, who also will drive the six-cylinder Stearns in the race for heavy cars, entered by E. H. Inman, of Atlanta, Ga. The third Georgia entry is that of a six-cylinder Thomas, also an Atlanta entry.

The county commissioners have established regulations closing the roads on the days of racing, and shutting them from 10 to 12 o'clock each day, beginning today, so the drivers of the racing cars can have a full swing at the course. During these hours guards are stationed at the cross-roads on the course.

The Isotta, with Poole up, made the 18-mile circuit in 19 minutes. He made it three times around in 61 minutes. This was before the regulations were put into effect keeping off the traffic during practice hours. Several of the cars have reported their speedometers have shown 85 to 90 miles. The cars already here and working on the road are three Appersons, two



ONE OF THE FINE STRETCHES

Isottas, two Stearns, the American, Lozier and Benz. Others are expected soon.

Four honorary referees of the races have been named. These are: William K. Vanderbilt, Jr., Governor Hoke Smith, Mayor W. Tiedeman and Jefferson de Mont Thompson. The city is filling up with representatives of the tire companies, officials and other auxiliary adjuncts to the races. So far tire stations have been selected by the Michelin, Diamond and Pennsylvania people. The military patrols have been perfected and everything is in readiness. It is expected that this unusual opportunity of setting records for stock

car road racing will be productive of figures unheard of before in this line.

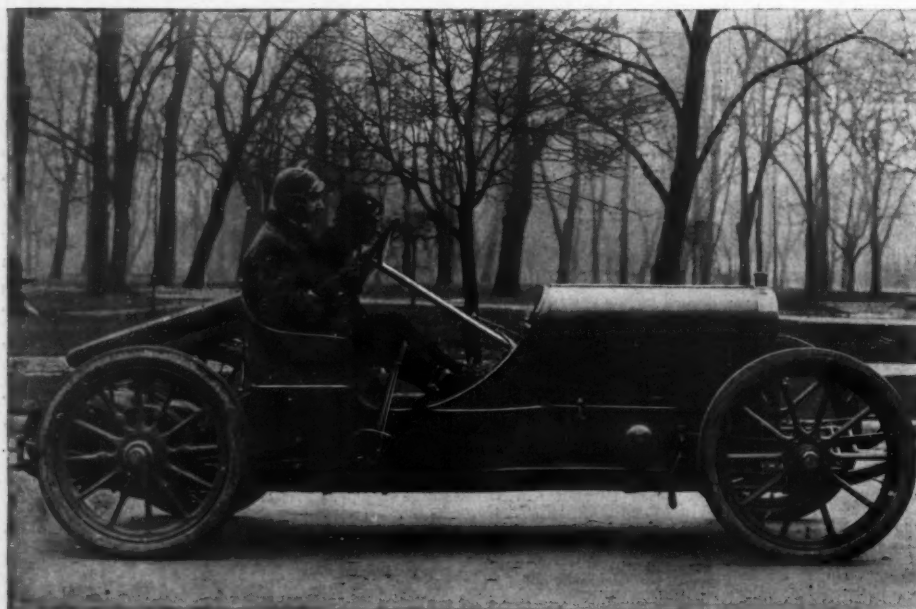
The Pullman and Studebaker cars, racing from Philadelphia, wired today from Charlotte for a routing from Columbia. They were sent via Augusta. Both are making good time and should reach here well together.

Savannah announces itself ready for the stock chassis speed endurance contests to be held here next week, March 18 and 19, under the auspices of the Savannah Automobile Club, and with the sanction of the A. A. A. The contests are, by the way, the first of their kind which have received the official sanction of the three A's. The local club and motoring enthusiasts have been joined by the officials of the city and county governments, the directorates of the trade bodies, the military organizations and citizens generally to make the 2 days' racing a success. Even the governor of the state, Hoke Smith, has given his encouragement to the meet by accepting the invitation to be present on the second day to witness the races and deliver the trophies at night. He also has followed the suggestion of the local military men, after the 2,000 members of the state militia volunteered practically to a man to police the course, and issued an official order calling them out for this duty.

This feature, military policing of the course, is counted on to go a long ways toward making the meet a success. Savannah is distinctly a military city, and sent more men to the Spanish-American war by far than the rest of the state combined. Fifteen hundred of these civilian soldiers will see there is no complaint from the men who drive the fast cars and that there will be no interference while the races are on.

With these in view no exertion has been spared to have things fit as a fiddle when the first car is started in the races, which Savannah hopes may become annual affairs. With a course which has been pronounced by hundreds of stranger motorists the best they have ever seen, declared by the racing drivers to be the fastest in the country, and raved over by tourists on account of the rare beauty of its scenery, the local committee in charge of affairs has not stood still, or rested on its laurels.

Realizing their ignorance in affairs pertaining to a series of races which would be entered by the best cars in America, and entice into competition some of the finest that foreign skill could construct, the Savannahans sought expert aid to improve the natural conditions which had won the award of the sanction in competition with other cities. Chairman N. H. Van Sicklen, of the technical board of the A. A. A., who visited Savannah prior to the awarding of the sanction, was brought back, and for several weeks has given his personal supervision to the details of the



FRED I. TONE AT WHEEL OF AMERICAN ROADSTER, A SAVANNAH ENTRY

preparations. The course has been resurfaced wherever it was needed. When it was desired to add to the first selected series of roads others which made the course better, nothing was thought of paving several miles of connecting links, so the idea might be carried out. This work has been finished and for 10 days the racing drivers have been sending their cars over the new roads as fast as they travel on the old ones. Andrews Brothers, of Mineola, N. Y., because of their previous experience in oiling the Vanderbilt cup course, were selected for this feature of the work at Savannah. This work, too, has been completed.

The course for the most part is absolutely level. There are dips here and there, and occasionally the semblance of an incline. The roads are from 20 to 50 feet wide, the stretch at the grandstand being of the latter width for several miles. The roads, with the exception of the new ones, are paved with what is known as Augusta gravel, a composition of gravel, sand and clay, which makes a hard, enduring pavement. The newer parts of the road are paved with oyster shells, with a cinder filler. This is a well-known road material for this section, and there are still in use roads which were paved with it many years ago.

There are a number of winding turns on the road, which will test the skill of the drivers to the utmost. These have been let alone. Where the course leaves one road for another, the turns were for the most part at sharp angles. These have been softened by long turns. In no feature of the preparations for the races have the public-spiritedness of the citizens been better shown than by their disposition to surrender land for the purpose of these turns. The curves have been banked and may for the most part be taken at speed.

A complete telephone system has been installed on the course under the direction of Mr. Van Sicklen, who also has had charge of the installation of signboards for the information of the racers as to the nature of the road ahead. Three hundred flagmen will assist the military on the roads and give signals to the drivers of mishaps ahead, of turns, etc. The grandstand, which is at the edge of the city, has been completed. It will seat 6,500 persons. The parking places are ready. The board on which will be shown the progress of the race, and the conveniences for the judges and other officials is well under way.

From every hand have been received inquiries and reservations, forerunners of the crowds which are already beginning to arrive. With the close of the Ormond-Daytona races a large number of those who attended the races there came to Savannah to secure accommodations before the rush. The city will be able to take care of all its guests in its many hotels and boarding places.

The interest displayed by the manufacturers in the races has not been disappoint-



SWINGING AROUND A BEND AT ISLE OF MAN ON SAVANNAH COURSE

ing, despite the dull season. Entries in plenty to make the events successful have been secured. Those of the entries which have already arrived are on the course twice a day. The Apperson, Stearns, Isotta and Thomas entries were the first to arrive. The Appersons and Stearns claim the greatest speed on the course so far. Each claims to have made between 83 and 85 miles an hour on the stretches.

The following is the list of entries.

March 19, Savannah challenge trophy race, 360 miles:

| No. | Car | Driver |
|-----|----------------|-------------------|
| 1— | Apperson | George Robertson |
| 2— | Isotta | H. N. Harding |
| 3— | American | Fred I. Tone |
| 4— | Isotta | A. L. Poole |
| 5— | Acme | |
| 6— | Lozier | H. Michener |
| 7— | Stearns | F. W. Leland |
| 8— | Apperson | Herbert Lytle |
| 9— | Allen-Kingston | |
| 10— | Benz | Louis J. Bergdoll |

March 18, runabout race, start in the morning, 180 miles:

| | | |
|----|----------------|----------------|
| 1— | Apperson | Nelson McLean |
| 2— | Thomas-Detroit | Lorimer |
| 3— | Pennsylvania | Leonard Zengle |
| 4— | Premier | |
| 5— | Thomas-Detroit | Light |
| 6— | Cleveland | |

March 18, southern high power car cup race, start in afternoon, 180 miles:

| | | |
|----|-------------|----------------|
| 1— | Thomas six | George Salzman |
| 2— | Stearns six | F. W. Leland |
| 3— | Hotchkiss | Harry Levey |
| 4— | Matheson | J. B. Ryall |
| 5— | Apperson | |

As a last step preparatory to the races the Savannah Automobile Club, under whose auspices the meet will be held, has become an incorporated body. An order granting the incorporation was passed in the superior court several days ago. The objects of the club as set forth in the petition for incorporation are to encourage the paving of the roads and the holding of motor car races in this state.



LOZIER CAR WHICH MICHENER WILL DRIVE IN GEORGIA



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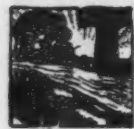
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AMERICA'S BIG ROAD RACE



THE running of the road races at Savannah, Ga., next week marks the beginning of what should prove a new epoch in motoring sports in America; not because America has not had its big road races—the three Vanderbilt cup events are not forgotten—but because the Savannah meet will be the first of its kind in this country in which the number of American entrants exceeds that of the foreign field. For the 360-mile event the American entries outnumber the foreigners at a two-to-one rate; a condition which has never occurred before in our road races except in the eliminating trial for the Vanderbilt cup when nothing but domestic cars competed. This augurs well for the advancement of road racing in America in that it will stimulate the spirit among the makers; it will provide a good ground for gaining experience for the seven or more American builders who have entered cars in a road race for the first time; and it will start the education of a group of drivers who must sooner or later win their spurs in big events, if this country is ever to measure its strength with foreign cars on a base of equality.

But the experiences of the race will not all be to the car builders and the drivers; the American Automobile Association, under whose auspices the races take place, will be a gainer in experience in that the militia will be used for guarding the entire 18 miles of the circuit, this being the first time government assistance in this form ever has been used on this side of the Atlantic. In aquatic events, such as international yachting races, government boats have been gratuitously loaned by the United States authorities for patrol duty; but although the securing of troops to guard courses for road races has been spoken of time and time again, the many motoring enthusiasts had almost given up hope of ever securing such assistance. The securing of troops by the Savannah club for the races was due primarily to the motoring enthusiasts of the state, who, realizing they had roads good enough for a race, further realized that to secure a big event the procuring of troops would have to be one of the leading arguments in drawing the event to their state. After the last Vanderbilt race the eastern motorists decided not to conduct another road race on Long Island without the aid of troops owing to the grave danger because of the impossibility of keeping the course clear. Since then the governor of Missouri, it is reported, has offered the use of

troops for the guarding of courses for road races in that state.

Apart from the big American entry list and the use of troops comes a third item in the epoch-making nature of the Savannah races, namely, the banking of turns on practically the entire course. Heretofore the unbanked turns of the road have been deemed sufficient for the highest powered cars, the factor of safety remaining with the expertness of the driver in making the turn. The Savannahans in their desire for record time on their highways have banked all turns, which if the work proves equal to the terrible strain that it will be subject to during the race, will undoubtedly be taken as a precedent for other road courses. It is certain the banked turns will add speed to the course; it will also add wear to the tires, the drivers being certain to take the turns at so much greater speed than if they were not banked. The banked parts will receive the hardest usage during the race; they will naturally be the softest parts of the course, due to recent construction; and if they stand up under the ordeal it will prove conclusively the advisability of banking turns on other circuits.

POLITICS VS. MOTORING



SOMETHING out of the usual was the visit of State Senator Frelinghuysen to the New Jersey Automobile and Motor Club for the purpose of "discussing" the proposed amendments to the law which hampers the enjoyment of motoring in a commonwealth where legislators early recognized the value of good roads. One must admire the sagacity of the senator in accepting the invitation to meet Jersey motorists last Friday night at Newark, but those present soon learned that all politicians are more or less alike in their methods. The man from Somerset county said he had come to "learn the views" of the motorists, and, furthermore, he was in a "receptive mood." No; he was not prepared to state positively what action he might take upon certain proposals; he would take them "under consideration."

But one should not blame a man who has an eye out for a governorship because he takes inventory of what he has and then seeks information first hand as to the growing strength of those holding ideas contrary to opinions obstinately hugged by his assured constituency. And the senator found there is now an organized and determined opposition to further complacent acceptance of motor car legislation which is based in prejudice and with

scant desire to grant fair treatment to the new users of the road. Privileges are not sought; justice is demanded.

It is among the possibilities that Senator Frelinghuysen may have accumulated more of a reputation as an anti-motor car motorist—for he is a car owner—than he really intended, and, in looking after the main gubernatorial chance, he may desire to show that he himself is not inclined to be pronouncedly antagonistic to the law-abiding motorist—providing that same motorist is there with the votes. As a matter of fact there is ground for belief that the senator is the victim of his Somerset supporters, and is really in a deuce of a fix as to how he can extricate himself gracefully and without loss of prestige. Truly, the position of the politician is such as to entitle him to sympathy rather than unlimited condemnation.

We are told by the senator that conditions are so peculiar in New Jersey that reciprocal recognition of the licenses of other states is impracticable—for the outlanders wear out the roads, disregard the rights of other users of the highways and commit other crimes. Elsewhere in this country it is possible to punish outlanders when they are guilty of infractions of the motor car law, even when they only carry the registration numbers of their home states; it is also computed that they frequently leave behind enough money to offset any wear of the roads resulting from their passage. But "conditions" in Jersey prevent similar procedure; therefore, the outlanders are remaining outside of the "Chinese wall" in greatly increasing numbers. Roads do not "wear out" in Jersey as in other states; motor cars "destroy" them; therefore, motorists ought to pay liberally for the "damage" which they wilfully accomplish.

But there is a limit in suffering injustice because a sane law does not replace an obnoxious statute which exists apparently because the machinery of justice cannot be operated—in New Jersey—in such manner as to punish the guilty without hampering the innocent and making his pursuit of motoring subject to interruption and oppression.

The need of local, state and national organization in motoring is emphasized in the New Jersey situation. Its ultimate outcome is a certainty. In other states the same experiences will be and are being encountered.





IF IT IS possible for each of the postmasters in the small towns to comply with the request of the authorities at Washington and placard the name of the place on the sign over the postoffice motorists will find it far easier to tour than it is at present. As it is now the occupants of a car running into a small town lose time identifying it. Generally the only sign is on the depot and that is hidden from view of the road. It is aggravating to have to stop and inquire in the daytime, while at night it is still worse. How much simpler it would be, in driving through the main street, to be able to glance at the postoffice, which is generally the most prominent store in town, and find where you are at. The scheme listens like one of the most feasible yet advanced to help the cause of touring.

THE Fiat Cyclone made a record of 77 miles an hour for 300 miles at Ormond, which surpasses the previous best of 70 miles made in the last grand prix. Some might think this astonishing mark ought to be wiped off the boards, judging by the reports of the fast work at Savannah, when the Isotta is said to have maintained an average pace of 86 miles an hour over a 5-mile stretch, which should be accepted as evidence that the course is faster even than the Savannahans had promised. Of course one can hardly expect a 5-mile burst of speed to be maintained for 360 miles or can it seem possible that Cedrino will lose his record next week, when the

road carnival is held, for the reason there are eleven turns in the 18 miles. A pace of 65 miles an hour would be exceptional. If that mark is made it will be a great feather in the cap of the maker whose car smashes it, for it must be remembered only stock machines will compete in the Georgia affair, whereas in previous road races in which record speed has been attained the cars have been out and out racing machines.

MOTORING'S strength is massed at Washington this week and the country at large will have an opportunity to see what organized effort can do in the way of securing legislation. This may sound like crowing before one is out of the woods or counting the chickens before they are hatched, but if assurances go for anything it would seem a wise prediction to declare that the Cocks uniform registration bill will emerge from the meeting of the judiciary committee with flying colors. This step safely taken, it is only one or two more short ones to get the measure through congress itself, so if the motorists of the country have responded to the appeals of the A. A. A. by writing their various representatives the big bill ought easily to become a law and order restored out of chaos because of its passage.

ORMOND now is history and it is not going to make such poor reading as some of the skeptics imagined when the skimpy entry list was made public. New records have been made and good ones at that and the Automobile Club of America can have the satisfaction of knowing it has perpetuated the line of annual beach meets if it has done nothing else. We of the north hardly appreciate the interest Ormond has for the tourists and the fact that the hotels report larger crowds than even in the palmy days of the meets would seem to show that Ormond has not lost its grip among those who have time, money and inclination to go south for the winter and watch the races.

SURELY the war department must have been impressed by the work of the Studebaker car, which carried a military message from New York to Fort Leavenworth, Kan. The car traveled through the blizzard from New York to Chicago, then plunged bravely into the muddy morasses between Chicago and the fort, emerging triumphant at the other end. That it could overcome all these difficulties and deliver the message ought to boost motor car stock with the government officials who have been carefully watching the run.

NOW that the New York-Parisers have emerged from the snow belt and forced their way through the mud of Illinois, Iowa and Nebraska, the contest is becoming in reality a real race. The newspaper paragraphers have exhausted their witticisms and as the leader breaks his way toward the Pacific coast his progress is being followed by hundreds of thousands of readers of the press reports and the affair does not seem half so nonsensical as when it first was broached. Surely the racers cannot undergo greater hardships than they have encountered so far, and if pluck and determination count for anything, there is every reason to believe the trip to Paris will be made. If it is not the contest will not have been in vain, for it will have proved the motorists fear not the elements and even if the progress is slow they manage to get ahead some way.

BOSTON and Buffalo wind up the major show circuit and while there are still some more cities to hear from it is safe to assume the 1907-8 big show season closes at the end of the week. As usual Boston can claim the credit for having the largest exhibition of the winter in point of number of cars displayed and that the New Englanders are enthusiastic over the motor proposition is shown by the attendance the first night, when 35,000 people packed the hall. Buffalo, too, can claim credit for stirring up the residents of Bisontown, so the rear guard can beat a safe retreat well satisfied with the showing it has made.

The Week in Brief



Ormond meet produces fine record crop, with Fiat, Renault and Benz cars carrying off the honors.

Pullman and Studebaker cars start in race from Philadelphia to Savannah.

Studebaker war car reaches Leavenworth, Kan., with General Grant's message.

Cadillac's standardization test in England delayed by snow on Brooklands track.

Chairman Hower working on Glidden rules; provision to be made for run-off of tie should one result this year.

Milwaukee's 3-day reliability run over triangular course starts Tuesday, all cars having perfect scores first day.

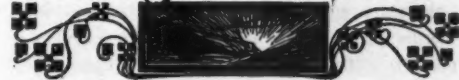
New York-Paris racers well on way to Pacific coast, with Thomas in the lead; two of Protos crew quit at Chicago.

Boston show opens with 250 exhibitors and attracts 35,000 people first night; Buffalo's sixth effort has an auspicious start.

All three races at Savannah fill well and record-breaking time is expected in big carnival next week; speed shown in training.

Foreign manufacturers rapidly getting their cars in readiness for French grand prix; details of construction of some of them.

Coming Motor Events



Florida Run—Jacksonville - Miami test, March 11-16, inclusive.

Savannah Road Races—Two days of road racing at Savannah, Ga., March 18-19.

Canadian Shows—National motor car and sportsmen's exhibition in Toronto, March 21-28; third annual show in Montreal, April 4-11. R. M. Jaffray, Toronto.

Pittsburg Show—Automobile Dealers' Association of Pittsburg show. Duquesne garden, April 4 to 11.

Denver Show—Three-day show in Denver, April 6, 7 and 8; G. A. Wahlgreen.

Westchester Road Race—Stock car chassis road race in Westchester county, New York, for Briarcliff cup, April 24.

Targa Florio—Third annual Sicilian road race, May 10.

Chicago Hill-Climb—Chicago Motor Club's third annual hill-climb, May 15.

Chicago Reliability Contest—Twelve hundred mile 4-day contest Chicago Motor Club, June 24, 25, 26, 27.

Grand Prix—Third annual French grand prix, July 7 and 8.

Chicago Economy Test—Third annual economy test of Chicago Motor Club, August 14.

ORMOND MEET PRODUCES A RECORD CROP

ORMOND, FLA., March 6—Thanks to the gallant doings of the game little guard of skirmishers that the Automobile Club of America had succeeded in gathering to preserve the continuity of the series of racing tournaments on Florida's far-famed, wave-washed sands, at the wind-up the sixth annual Ormond-Daytona meet was not only saved from utter failure, but even revived some of the glories of the past through several noteworthy and successful assaults on Father Time.

The crowning achievement of the meet was Emanuel Cedrino's 300-mile run on Thursday with the 60-horsepower Fiat Cyclone. In it the clever Italo-American covered three centuries in 3 hours 53 minutes 44 seconds, an average of 77.02 miles an hour, as against the former world's record average of 70.8 miles, scored by Nazzaro in a Fiat in the last grand prix run. Incidentally, en route, Cedrino put up 3 hours 16 minutes 48½ seconds as a new figure for 250 miles. The one long-distance record set at the beach—that for the previous maximum of Florida racing, 100 miles, which was 1 hour 15 minutes 40½ seconds, scored by Clifford Earp with his 80-horsepower Napier in 1906—was supplanted by 1 hour 12 minutes 56½ seconds, thanks to Maurice Bernin and his speedy 60-horsepower Renault, a performance the merit of which may be judged by the average of 82.26 miles per hour it showed.

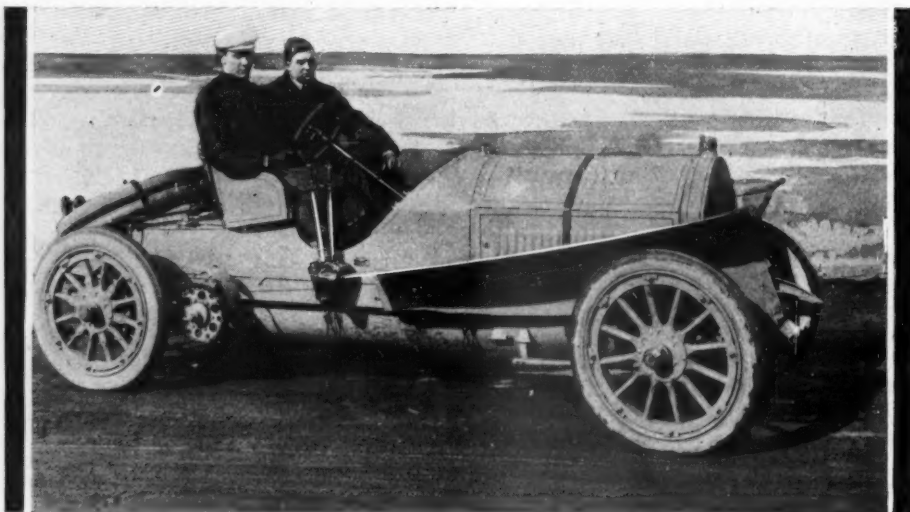
Records for the beach were established for 125 and 150 miles by Louis J. Bergdoll, of Philadelphia, with his 60-horsepower Benz stock car. On Tuesday, the opening day, in the 150-mile stock car race he scored 2 hours 10 minutes 38 seconds for 125 and 2 hours 40 minutes 33 seconds for 150 miles. The following day, in the invitation race for amateur drivers, he cut the 125-mile figures to 1 hour 53 minutes 30½ seconds, an average of 66.36 miles per hour.

With long-distance qualification requirements of 60 miles per hour in a minimum run of 100 miles, it was not to be expected that the sprints would show anywhere near the startling figures of previous years. For all that, on the closing day Cedrino put up 35 seconds for the mile in the Fiat Cyclone, beating the previous middleweight record of 40½ seconds, made by Guy Vaughan in the 80-horsepower Darracq in 1906. David Bruce Brown, a runaway schoolboy of 17, was allowed to use the Fiat Cyclone and captured the amateur mile record of 35½ seconds, which supplants the long-standing

39 seconds mile made by W. K. Vanderbilt, Jr., in a 90-horsepower Mercedes in 1905, a good drive for the youngster. As a further result of the mile time trials rival claimants were evolved for the stock car record. R. G. Kelsey, in the 60-horsepower Christie, twice made 42½ seconds, and Louis J. Bergdoll scored 45½ in the 60-horsepower Benz. Robert Lee Morrell, the referee, ruled that the Christie had complied with the A. A. A. stock car rule, since the Christie was a stock car, with parts ready for the construction of duplicates on order, and that in a mere record trial it was not required that ten or twenty cars of the same model should be built. Mr. Bergdoll will appeal to the A. A. A. racing board.

Motor Age last week told briefly of the luckless and unpromising raising of the curtain on the tournament, how the Renault was unable to face the starter through an oil feed breaking in practice, requiring 2 days of tinkering to fit the engine for racing; how bitter was the disappointment of R.

last, through an excellent contest, in which three of the four contenders survived to the finish. The world's average speed for an international cup distance was broken and the famous stretch of Florida beach sand took on once more the unrivaled racing shape that has given it fame as the fastest motor car race course on earth. In this, the chief event of the tournament, the 256-mile run for the Automobile Club of America cup for the first time during the tournament, those worthy Italian and French rivals met, Bernin having at last repaired the damage done the engine of Paul LaCroix's new 60-horsepower Renault racer through the breaking of an oil-feed in preliminary practice. Cedrino, as a matter of course, was at the wheel of the Fiat Cyclone. On behalf of the United States, two Christies essayed to go against the foreigners; the 120-horsepower Big Bear, piloted by E. B. Blakely, and the Little Christie 60, driven by R. G. Kelsey. The race was run over the entire beach course of 16 miles, in eight circuits of 32



LOUIS BERGDOLL AT THE WHEEL OF THE GERMAN BENZ

W. Buckley in having a broken transmission and other ills to which at times motor flesh is heir, putting his B. L. M. Vanderbilt cup candidate of 1906 out of commission for the meet; how R. G. Kelsey was plunged into despair through breaking the crankshaft of the Haynes in practice, and how the poor condition of the beach necessitated the running of the first 2 days' races at the Daytona end of the stretch, over an only fair-conditioned course.

With the third day's racing on Thursday came the redemption of the meet at

miles each. The race was originally scheduled for 288 miles through fear that the incoming tide might rise too high before that point was reached so it was agreed before the start to reduce the distance for the cup race to 256 miles.

As may be imagined, there was eager rubbernecking for the one that should first be sighted returning from the inlet. It proved to be Bernin, who completed the 20 miles in 15 minutes 59 seconds, followed by Kelsey in 18 minutes 58 seconds and Cedrino in 19 minutes 36 seconds. The Fiat had stopped 5 minutes to replace an igniter. The first lap was completed with Bernin still in the lead, pursued by Cedrino, who had passed Kelsey. In the next lap tire troubles befell the Renault, which was the beginning of its final undoing. Thrice did Bernin have to stop; twice to put on a new rim and once to make a complete change of shoe and tube. The 100-mile post was reached by Cedrino in 81



ORMOND CROWDS LINED UP ON BEACH WATCHING A RACE

minutes 39% seconds; by Bernin in 97 minutes 33% seconds and by Kelsey in 98 minutes 27 seconds. All three thus qualified for the sprints on the following day, according to the rules.

For 84 miles the race was fairly close between Cedrino and Bernin, but after that two stops for replacements made the Renault's chase of the Fiat almost hopeless, though the Frenchman persevered to the end. Cedrino finished in whirlwind style, not having had to stop to change his tires, his time for the 256 miles being 3 hours 21 minutes 27% seconds. The final brush for second place between Kelsey and Bernin was exciting, only a quarter of a mile separating them at the tape. The American finished 12 seconds ahead of the Frenchman. The big Christie had sucked a bit of the porcelain plug into the cylinder and was early out of the running, though Blakeley struggled on for two circuits before quitting. The score:

| | | | | |
|-------------|--------|--------|--------|------------|
| | 32 m. | 64 m. | 96 m. | 128 m. |
| Cedrino ... | 29.16 | 54.14 | 78.46 | 103.11 |
| Kelsey | 31.15 | 61.58 | 94.54 | 123.55 |
| Bernin | 25.37 | 55.52 | 93.38 | 117.40 |
| | 160 m. | 192 m. | 224 m. | 256 m. |
| Cedrino ... | 131.34 | 145.58 | 178.09 | 201.27 2-5 |
| Kelsey | 157.58 | 176.59 | 217.02 | 246.26 |
| Bernin | 149.43 | 165.38 | 222.14 | 246.38 |

Bergdoll, Benz; Kelsey, 60-horsepower Christie. The Fiat presented the greatest probability of good time. It was admittedly the fastest sprinter on the beach, and Cedrino had fitted it with enlarged sprockets for the trials.

After the other contestants had had their fling at Father Time, Cedrino made his run with the Fiat. The result was a record of 35 seconds. Few had anticipated so fast a showing by a long-distance car. Though it does not approach, of course, the 28% seconds made by Marriott with the Stanley steamer or the 30% seconds scored by Demogeot on this beach in 1906 with the 200-horsepower Darracq, or the 32% seconds made by H. L. Bowden with the 120-horsepower overweight Mercedes in 1905, it has only been beaten by one long-distance gasoline car, the 80-horsepower Napier, which Arthur Macdonald drove in 34 % seconds in 1905. Walter Christie tied it with 35 seconds in the Great Bear at Atlantic City in 1905. As before stated, however, Cedrino sets up a new middle-weight record in place of the 40% seconds scored by Guy Vaughan in the 80-horsepower Darracq in 1906.

1904 in a 90-horsepower Mercedes. The officials consulted and set up the wire traps for him. The youngster took the wheel of the Fiat Cyclone and captured the amateur record with a mile run in 35% seconds.

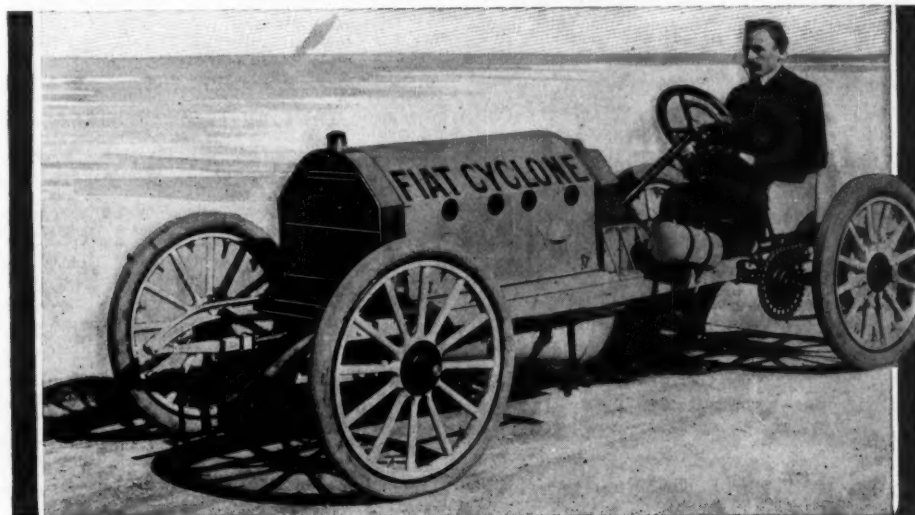
Honors were made fairly easy between the rival foreign cracks and tiremakers by the outcome of a 100 mile match race between the Renault, driven by Bernin, and the Fiat Cyclone, with S. B. Stevens at the wheel. It is whispered that the wager was \$200 a side. This time Michelin tires did themselves proud and made a strenuous century without being touched. The reliable Renault ran without a skip, won the match hands down and at the end had gathered to itself a new world's record for the distance of 1 hour 12 minutes 56 seconds, supplanting Clifford Earp's 1 hour 15 minutes 40% seconds made in the Napier in the race for the Minneapolis cup in 1906. The score tells the tale in part:

| | | | | | |
|-------------|-------|-------|-------|-------|-----------|
| | 24 m. | 56 m. | 68 m. | 88 m. | 100 m. |
| Bernin | 17.42 | 41.02 | 49.50 | 64.10 | 72.56 1-5 |
| Stevens.... | 20.42 | 44.02 | 52.34 | 75.02 | 83.59 |

The Renault led from start to finish. At 4 miles Stevens stopped at the stand, thinking there was trouble with his engine, found none and continued. Farther down the beach, however, he lost 5 minutes in replacing an igniter. The Fiat lost some of its speed of the day before, and Cedrino attributed it to the big sprockets and the feeding of too much gasoline. The attempt to break the stiff wind with the big sprockets for a long distance slowed him. Most of the officials of the meet left for the north tonight.

Four in Florida Race

Ormond, Fla., March 10—Special telegram—Only four cars started yesterday from Jacksonville in Senator Morgan's run through Florida. Two of them were ready to start for Rock Ledge this forenoon. Dr. W. N. Stinson's Cadillac runabout reached here about 7 o'clock last night. C. F. Wheeler's 1905 car made an early-morning run of 50 miles from St. Augustine in 3 hours 50 minutes, having been detained there over night repairing a leaky radiator. In a race with Dr. Stinson's car to reach Ormond first Claude Nolan's Cadillac ran into a tree 5 miles from here and will start again when its axle is repaired. Dr. Pittmann's Buick runabout gave up at St. Augustine, owing to the doctor receiving a professional call home. The run has proved that the 85-mile trip from Jacksonville to Ormond can be made inside of 7 hours. There were not as many contestants as expected, but the race is proving an interesting experiment just the same.



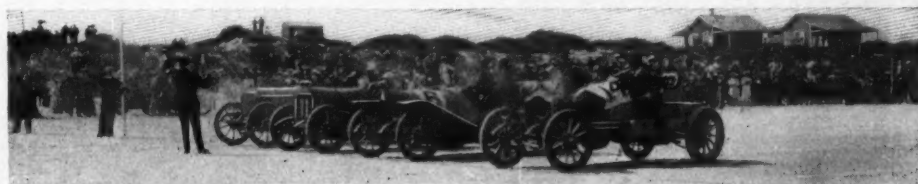
EMANUEL CEDRINO IN RECORD-BREAKING FIAT CYCLONE

Cedrino covered 250 miles in 3 hours 16 minutes 48% seconds. It had been arranged during the progress of the race that the record-breaking Fiat should continue and put up new figures up to the 300 miles. This it gallantly did, the postscript score being: 276 miles, 215 minutes 56 seconds; 288 miles, 224 minutes 37 seconds, and 300 miles, 233 minutes 44 seconds, thus setting up 3 hours, 53 minutes 44 seconds for a new world's record.

For the get-away day of the meet Florida's favorite saint had favored the motorists with a fast beach and a stiff wind from the south for the record trials, which were scheduled to start the last racing session of the tournament. Four cars had qualified for the sprints by averages of 60 miles an hour or better, all in hundred miles or more runs in previous races. All faced the electrically-operated tape. They were: Bernin, Renault; Cedrino, Fiat;

Bernin in the Renault was content with 39% seconds with long-distance racing equipment. R. G. Kelsey made 42% seconds twice in succession with the Little Christie, and L. J. Bergdoll scored 45% seconds and 45% seconds in the Benz, with G. P. Parker driving.

After the racing was all over Bruce Brown, a New York schoolboy, who had run away to attend the meet and had made friends with Cedrino, begged to be allowed to try for the amateur record of 39 seconds held by W. K. Vanderbilt, Jr., since



BIG FLYERS ON THE TAPE AWAITING THE STARTING GUN

Worlds Racers Pierce the West



THOMAS CAR IN FREDRICKSON'S GARAGE IN OMAHA

CHICAGO, March 11—Casting off the role of the tortoise, the contestants in the New York-Paris race are now speeding through the west, and the affair has at last become somewhat of a race, with the Thomas cutting out a pace which bids fair to carry the American champion into San Francisco days ahead of its nearest rival. Strung out behind are the foreigners, one or two of them only a few days out of Chicago, others well in Nebraska, but each sticking doggedly to the task of getting across the American continent. There has been no shipping of cars, which for a time promised to make the race a farce. The committee in charge of the race cabled from Paris that it would not countenance such an act, so those who had given the idea consideration buckled down to work again and chased the Thomas. No one knows exactly how this proposition bobbed up. Some say St. Chaffray was responsible for the idea.

Chicago entertained the stragglers during the past week. It gave them courteous treatment as it had the others, but there were no banquets, no enthusiastic turnouts of the motorists. The Motobloc

crept into town last Wednesday unexpectedly and did not have even the services of a pilot. The Protos came the next day, and it, too, failed to stir to enthusiasm the motoring army, although in this case there was a fair-sized procession that followed the Germans into town. But while this visit did not arouse the town, there was the usual bit of sensationalism in the advent of the tourist, for it was here that Hans Knappe and Ernst Mass of the German car decided they had enough of the race and started back home. It would seem that the trouble had been brewing for some time, but the matter did not become public Saturday morning when the Protos came to the tape. Then it was discovered that there were only two men in the car, Captain Koeppen and O. W. Snyder, the latter a Chicago man and a recruit from the factory of the Woods Motor Vehicle Co. Then it came out that Knappe and Mass had started to retrace their steps to the fatherland the night before. While no other reason was given than that they had tired of the trip, it is said there was some jealousy.

The Motobloc and the Protos did not

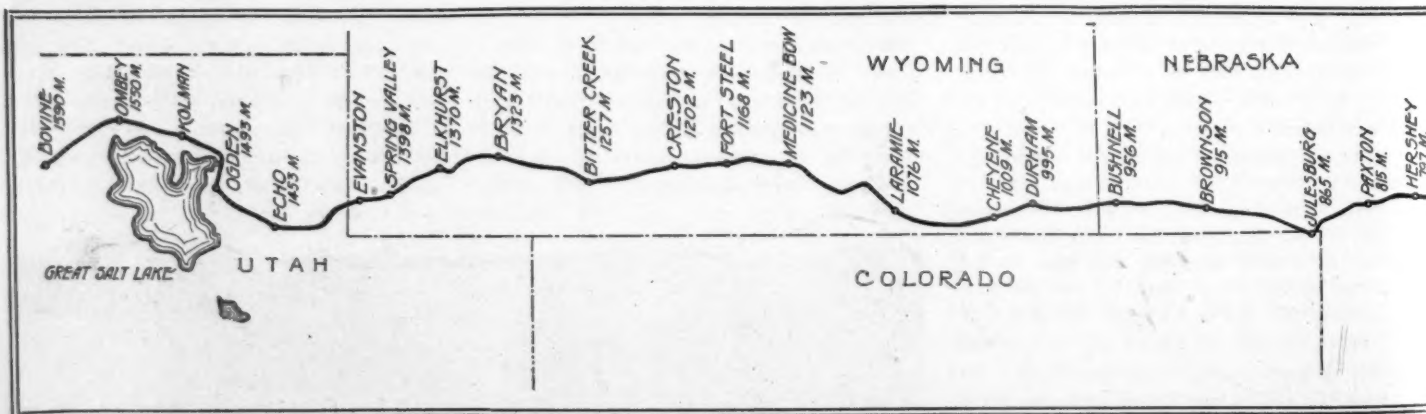
hurry to get out of town. The former wanted to go Friday, but upon the request of the Protos delayed a day. At the appointed hour Saturday the Protos was not ready, so the Motobloc started by itself, leaving the German to follow a few hours later. Both cars were thoroughly tuned up here.

Last Thursday morning the Thomas was in Omaha, the Zust in Vail, Ia., the de Dion in Cedar Rapids, Ia., and the other two in Chicago. The de Dion had been in Cedar Rapids for several days for repairs, it being necessary to brace the frame. The adventures of the de Dion in this neck of the woods are best told in a series of letters to Motor Age from Lescares, who writes under date of March 2: "Bad luck is with us. This morning we started at 7 o'clock from Calamus and, after running 1 hour over very heavy roads, we had trouble with our springs.

DAY BY DAY PROGRESS OF CARS

| Date | Thomas | Zust |
|---------------|-----------------------------------|-----------------------------------|
| March 5..... | Columbus, Neb. 1,627 miles | Dennison, Ia. 1,467 miles |
| March 6..... | Lexington, Neb. 1,767 miles | Woodbine, Ia. 1,496 miles |
| March 7..... | Julesburg, Colo. 1,908 miles | Omaha, Neb. 1,536 miles |
| March 8..... | Cheyenne, Wyo. 2,052 miles | Omaha, Neb. 1,536 miles |
| March 9..... | Laramie, Wyo. 2,109 miles | Central City, Neb. 1,667 miles |
| March 10..... | Medicine Bow, Wyo. 2,166 miles | Ogallala, Neb. 1,801 miles |
| March 11..... | | Paxton, Neb. 1,858 miles |

We had to go slowly all the way to Cedar Rapids, where we arrived at 3:30 p. m. We had an enthusiastic reception, given by the Cedar Rapids Motor Club, and every courtesy was shown us. The silk pennant of the Chicago Motor Club was



ROUTE FOLLOWED BY CONTESTANTS IN THE NEW YORK-PARIS RACE SINCE LEAVING



ZUST IN LE GRAND, IA.

admired everywhere. Iowa is a beautiful state, but we have as much mud here as we had snow in Indiana. The motor of the de Dion is a wonder, but the body is too heavy for the chassis."

The de Dion did not get away from Cedar Rapids until last Sunday, and on Monday it made Le Grand, Ia., from which point Lescares writes: "We left Cedar Rapids at noon Sunday, cheered by a big crowd and with the best wishes of the Cedar Rapids Motor Club. The roads were so muddy we stuck going down hill, the grade of which was about 15 per cent. The farmers are very obliging and the race keeps them enthusiastic. All the wires are kept busy night and day, for the farmers never would forgive themselves if they missed the chance to see the cars go by. The Studebaker passing through here helped matters, and everywhere interest is manifest in the race be-



DE DION AT CEDAR RAPIDS, SHOWING SAG IN FRAME

this the second drive shaft we made at Chicago broke. This was at 11 o'clock Sunday night, and we stopped here, while St. Chaffray went to Omaha for the extra parts we had shipped ahead."

The broken drive shaft proved more serious than expected, and Monday Lescares writes from Marshalltown, Ia., that the de Dion is awaiting the shipment of the new parts from Omaha.

While all this was going on the Thomas was plugging along for the coast. It made 91 miles on Thursday to Columbus, Neb., while the Zust was making 9 miles from Vail to Dennison, Ia. At this point the Thomas had 160 miles lead of the Zust. Roberts found the going through Nebraska hard because of the rain and mud.

Roberts made 140 miles on Friday, while the Zust made slow progress over the railroad ties, the Thomas getting to Lexington, Neb., and the Italian to Woodbine, Ia. At this point Roberts had increased his lead to 281 miles, finding the roads in fair condition—hard sand, with grass in the middle. Zust only made 20 miles. The roads were practically impassible because of the deep mud produced by 3 days of rain. The heavy car constantly sunk into the mire

to its hubs until in despair Sirtori appealed to the Illinois Central people and secured permission to run over the rails on a time schedule.

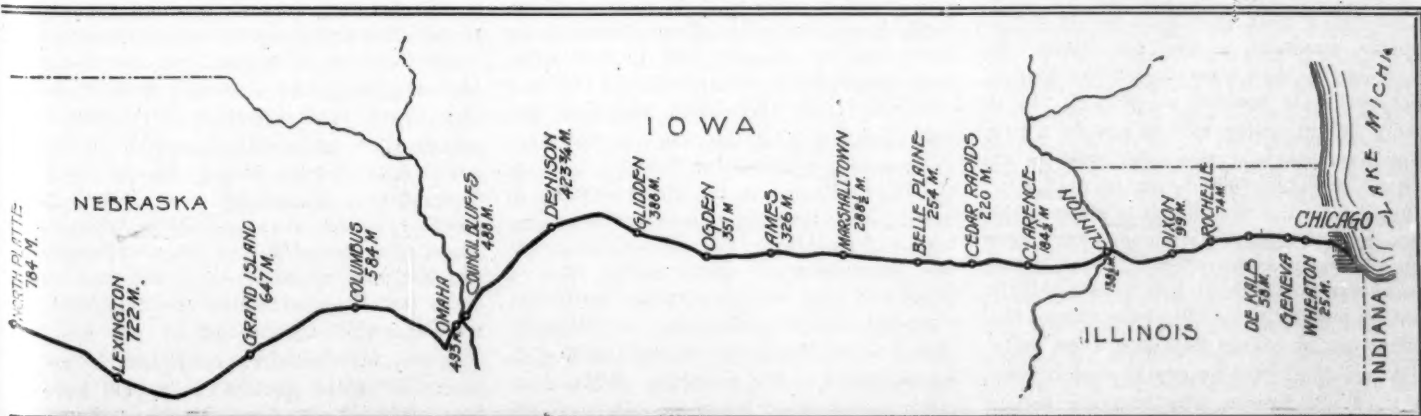
Saturday saw the Thomas in Julesburg, Colo., at supper time, while the Zust was happy in getting to Omaha. It was continually losing ground, and the speedy American car was at this time 372 miles ahead and with fair roads ahead. Roberts was anxious to get to Cheyenne, where he was to be relieved by E. L. Mathewson of Denver, so, after a hasty supper in Julesburg he pushed on.

This morning the Thomas was reported stuck in a snow drift 100 miles west of Cheyenne. The Protos was said to be a short distance west of Paxton, Neb., 194 miles from Cheyenne, laid up with a broken jackshaft. It was 347 miles behind Mathewson. Sirtori expected to find a duplicate shaft at Cheyenne, but it could not be unearthed, so it was necessary to stop while a search was being made for the part. So great is the interest being taken in the race that the Union Pacific held a fast passenger train 10 minutes, expecting to have to carry the duplicate shaft to the Italians at Paxton.

IN THE NEW YORK-PARIS RACE

| De Dion | Protos | Motobloc |
|----------------------------------|-------------------------------|---------------------------------|
| Cedar Rapids, Ia. 1,262 miles | Chicago 1,043 miles | Chicago 1,043 miles |
| Cedar Rapids, Ia. 1,262 miles | Chicago 1,043 miles | Chicago 1,043 miles |
| Cedar Rapids, Ia. 1,262 miles | Geneva, Ill. 1,078 miles | Maple Park, Ill. 1,093 miles |
| Tama, Ia. 1,313 miles | Rochelle, Ill. 1,118 miles | DeKalb, Ill. 1,101 miles |
| Marshalltown, Ia. 1,331 miles | Clinton, Ia. 1,181 miles | DeKalb, Ill. 1,101 miles |
| Marshalltown, Ia. 1,331 miles | | |

tween the American and foreign cars. Iowa seems determined to hold us here, as did Indiana, and we find it hard going in the mud. We had trouble with the rim of one of our rear wheels, and it took about an hour to fix it. Then following



CHICAGO, SHOWING FLIGHT OF THOMAS THROUGH NEBRASKA AND WYOMING

NO TIES IN GLIDDEN

Tentative Rules for the A. A. A. Annual Tour Provide for Possible Run-Off for Trophy

New York, March 9—Chairman Hower of the A. A. A. touring board expects to have the Glidden rules ready some time in April. One feature of the revised rules that is certain to cause general commendation is a provision that cuts the string the Buffalo Automobile Club has had attached to the Glidden trophy ever since it first was offered for competition. It is understood that the new rules will provide for a run-off in case of a tie between any two clubs. Under the old rules the trophy had to be distinctly won from the holding club by some other organization, and in 1907, when the Buffalo club was in a tie with some others, the Buffalo club retained the trophy. This year if the Buffalo club finishes in a tie with others it will have to fight it out with them on the road.

The rules have not yet been officially given out, but enough of their probable character is known to permit of discussion. The plan for awarding the trophy this year will be an improvement on that of last year. The desirability of a club being able to enter a team composed of one make of cars has been considered, and one club will be allowed to split up nine cars into three teams of three cars each or six cars into two teams. The trophy will be awarded on the basis of club teams, probably to the club having the most teams with clean scores, or in event of no clean scores, to the club standing best in the penalization table. The penalization system will be the same as that found so satisfactory last year—one-third of a point per minute, or per dollar, for a club having three cars competing, one-ninth of a point for one having nine cars, etc. Everyone seems to favor this.

Another interesting provision that probably will be made is one concerning deducting the time lost because of tire trouble. Many manufacturers object to having to make up the time lost in the repairs, because tire troubles are a gamble pure and simple, but it was pointed out that if the rules provided for allowing the time spent fixing tires that some would deliberately puncture a tire and repair it, in order to take time to let the engine cool should it become overheated. It is likely this objection will be met by a rule that time spent in tire work will be allowed, provided the engine is kept running, but that if the engine is stopped the time will have to be made up, as it was done in last year's contest.

Another point about this year's tour is that all possibility of discussion among the committee in charge has been done away with and there will be one executive head to it, F. B. Hower, who was the actual manager last year, although a committee

was nominally in charge. Mr. Hower, having proven his ability, the executive committee of the A. A. A. decided to abolish the executive committee of the touring board and let the touring board chairman be the sole manager of the tour and contest. This will definitely fix all responsibility while the tour is in the field. Mr. Hower is in Buffalo now, where he is to assist in the opening of the sixth annual show Monday night.

RACING TO SAVANNAH

Philadelphia, Pa., March 10—An eleventh-hour response having been made by the Pullman local representatives to the defi of the Studebaker people for a race from this city to Savannah, the two cars were officially started from the Quaker City Motor Club quarters at the Hotel Walton at 8:30 Wednesday morning. The Studebaker is the same 30-horsepower touring car that finished clean in the Q. C. M. C. New Year's endurance run, and is driven by Frank Yerger, who officiated on the previous occasion, assisted by his brother Robert. The Pullman is a 40-horsepower roadster, and P. F. Gillette and Robert L. Morton will alternate at the wheel. George W. Daley is acting as observer in the Pullman, and W. J. Boyd in the Studebaker—both appointed by the Q. C. M. C. With the aid of teams at many particularly bad spots, the Pullman had reached Fredericksburg at noon Saturday. It took 30 hours to cover the last 37 miles of the journey to that point. The Studebaker was some 20 miles to the bad, Frank Yerger refusing to call on equine assistance. His brother was taken sick and was left at a roadside farmhouse on Friday, and Frank Harris was rushed from Philadelphia as a relief. Advances today reported the arrival of both cars at Petersburg, Va. The Pullman is said to have taken 16 hours to go 215 miles.

ROAD CONGRESS IN OCTOBER

Paris, March 3—October 11 and the 7 following days have been selected as the date of the international road conference to which the French government will invite representatives from all nations of the world. The program of the conference, which is due to the initiative of Minister of Public Works Barthou, is the improvement of roads to fit them for modern methods of locomotion. Two main sections have been formed, the first to deal with road construction and upkeep and the second with traffic regulation and road exploitation. During the week of the congress a public exhibition will be held at the Jeu de Paume, in the Tuilleries garden, dealing with methods of road construction, tools and machinery, for road building and the suppression of dust, models of vehicles and their influence on road surfaces, signposts, danger indicators, etc. Models intended for the public exhibition should be addressed to the secretary of the first international road congress, ministry of public works, 24 Boulevard Saint-Germain.

GET READY FOR RACE

Foreign Manufacturers Give Out Points of Construction Used in the Grand Prix Cars

Paris, March 3—From what can be learned around the factories the racers now being built for the French grand prix will have a stroke varying from 6.6 inches to 7.08 inches, this latter being regarded as the practical limit for an engine with a bore of 6.1 inches. Panhard, whose three engines are now ready, has adopted the smaller bore of 6.6 inches, for the four-cylinder motors, the horsepower of which is given as 125. Separate steel cylinders with copper water jackets are employed, symmetric valves being on opposite sides. In other engine features the racers follow touring car models, with Krebs carbureter having hydraulic regulator; centrifugal water pump, honeycomb radiator and disk clutch. For the first time since 1904 Panhard racers will have chain drive. The tendency to reduce both wheelbase and tread is clearly shown in the Panhard racers, the former being but 104 inches and the latter 51 inches. Germain, the only Belgian contestant, will, like Panhard, have a full team of four-cylinder cars, with separate steel cylinders copperjacketed. The bore is the maximum, and stroke is declared to be 175 millimeters. Bosch high-tension magneto has been fitted, and engine cooling is effected by centrifugal pump and honeycomb radiator.

Weigel, the only Englishman who competed in last year's race, has three interesting chassis under construction for the Dieppe race next July. The four cylinders are in one casting, with valves at an angle of 45 degrees at each side of the domed head. The cylinder bore has been fixed at 154.5 millimeters, half a millimeter being sacrificed in order that there may be no possibility of objection. The stroke is being kept secret, and will not be announced until a few days before the race. The valves, which have a face measurement of no less than 75 millimeters, are so inserted in the cylinders as to decrease the pocket area to the uttermost. The exhaust valve is water-cooled round the guide and valve seating, both being part of the cylinder proper.

The camshaft, with integral cams, runs in three ball bearings carried in standards cast on the top of the cylinders. It is operated at the radiator end by a worm gear and vertical shaft. The wheelbase is 110 inches, transmission is through selective sliding gear, and final drive through rear live axle. The machine is declared to be built considerably lower than any of last year's grand prix racers. Though Edge, of Napier fame, will not appear in the grand prix because he is forbidden to use detachable wheels, which are barred by the rules, England will have a six-cylinder representative in the Austin. Four cars have been built, all with 5-inch bore and stroke, two of them having side chains and two

live axle drive. These details all have been eagerly absorbed by those who are interested in the race.

This about covers all that is known of the constructional features of the cars that will participate in the grand prix. The French are pleased that the Thomas is in, for since the last Vanderbilt, in which there were three Thomases, two of them driven by Frenchmen, Le Blon and Caillois, this country has had an eye on E. R. Thomas, and it was hoped he would try for honors on this side of the ocean. Now that he is coming he and his representatives will be given a warm reception. Montague Roberts is well known as a driver and he has become particularly prominent since he took the wheel of America's representative in the New York-Paris race. Christie was in the last grand prix and though he had tough luck and did not finish, still he was a warm favorite with the French sportsmen who witnessed the running of the race.

MOVE ON TO WASHINGTON

Washington, D. C., March 10—Special telegram—In response to the efforts of the American Automobile Association there are assembling in this city many motoring celebrities who will appear before the judiciary committee Thursday and argue for the Cocks uniform registration bill. It is announced that preliminary to the hearing there will be a conference of the delegates from the various clubs and associations interested in the hearing, at the New Willard hotel tomorrow evening. The conference to determine on the best method of placing before the judiciary committee of the house the arguments in favor of the bill will be presided over by President William H. Hotchkiss and Charles Thaddeus Terry, chairman of the legislative board. A large showing of the delegates to be present at the hearing is expected. Several members of the house and senators will also be in attendance to assist in advising the conference in the matter of legislative procedure, etc.

PREPARING FOR A BIG WEEK

New York, March 10—In preparation for the carnival week April 6 the various committees are busy. The parade committee has received permission to use the city streets the night of April 7 for its monster parade and street exhibition, while the program has been arranged for the hill-climb which takes place Thursday, April 9. The classifications have been drawn up broad enough to include all grades of cars. The price classification will prevail, and will be as follows: Stock gasoline cars selling for \$1,000 and under, stock gasoline cars selling over \$1,000 up to \$2,000, stock gasoline cars selling over \$2,000 up to \$3,000, stock gasoline cars selling over \$3,000 up to \$4,000, stock gasoline cars selling over \$4,000 up to \$5,000, stock gasoline cars selling over \$5,000, stock steam cars any price, stock electrics, free-for-all, racing or stock cars, any price.

BADGERS ON LONG RUN

Milwaukee Reliability Test Starts and All Cars Have Perfect Scores the First Day

Milwaukee, Wis., March 10—Special telegram—Only eight cars started in the 3 days' reliability run today and all of them survived the trip to Oshkosh, the first leg of the triangle. They were the Cleveland and White in class A; the Thomas-Detroit and Rambler roadster in class B, and the Reo, Maxwell, Jackson and Rambler two-cylinder runabout in class C. The roads were very muddy, at times almost impassable, and some big snow drifts were encountered, yet exceptionally good time was made, all arriving in Oshkosh ahead of schedule.

The official car experienced trouble after leaving West Bend, following a delay at Fond du Lac because of a broken clutch. George Browne, of the Browne-Friend Motor Car Co., Milwaukee, offered a Mitchell car for the use of the officials and the newspaper representatives, but after a brief communication by telephone, Driver Bate, of the Rambler, assured the officials he would have the Rambler ready to complete the run at the appointed time, and that he would be ready to start at 3 o'clock on Wednesday morning.

The Logan truck, carrying accessories, had bad luck and did not arrive until nearly noon. It lost the road and remained in West Bend Monday night.

For the second day's run class A cars will leave here at 5 a. m. and arrive at Beloit at 6:30; class B cars will leave at 6 a. m. and arrive at 6 p. m., and class C cars will leave at 7 a. m. and arrive at 5:30 p. m.

The contest is being run at a time when Wisconsin has its first real March thaw, alternating with frosts and freezes. It is hard to conceive of a more severe test for a car. The roads are in terrible condition. The strain on the cars, therefore, is great. There ought to be no such thing as a perfect score in this run. To travel through snow drifts rivaling those encountered by the New York-to-Paris cars, through ponds of water from 6 inches to 2½ and 3 feet deep, through mud that reaches to the top of the wheels, is bound to force at least some repairs. Penalties for removing or breaking seals will be levied on every car, without doubt, it is expected.

There are three classes of cars—class A, touring cars, runabouts or roadsters catalogued at \$3,000 or over; class B, touring cars, etc., listed at \$1,800 or over up to \$3,000, and class C, all machines listed at a price under \$1,800. All cars entered are stock and of either 1907 or 1908 styles. The different parts of the machines are sealed and no tampering will be allowed. Cars and motors may be stopped at any time on the trip providing no work is done on them in the way of adjustment. Gasoline, water and oil may

be taken on at the various stopping places. A perfect score will be awarded to the cars that make the 3-day run without penalization. All of the laws of the state will be observed at every point.

Clark S. Drake is officiating as referee. Dr. Louie Fuldner, James E. Drought and A. C. Brenkle were starters at Milwaukee. The cars will be closely watched along the route of the race and a number of secret service men have been engaged to keep an eye on the different machines until the race is finished.

The route of the run was from Milwaukee to Oshkosh on the first day. Tomorrow it is from Oshkosh to Beloit by way of Madison and Janesville. On the third day the return trip to Milwaukee will be made. Arrangements have been made for the comfort of the contestants along the route.

CADILLAC TEST IS DELAYED

Chicago, March 9—Cable dispatches to the Daily News from London state that the Cadillac standardization test at Brooklands has been delayed by ice. The reassembling of the three cars from the parts which had been placed in one pile had to be postponed because of a snow storm which suddenly changed into a heavy rain, flooding the barn in which the parts were stored with a combination of water and snow. Freezing weather immediately ensued, so that the parts had to be dug out of the ice. Nevertheless they are being put together rapidly with the intention of carrying out the experiments as soon as possible. An army of men is clearing the 3-mile track of ice and snow. "Swarms of motor cars carrying hundreds of enthusiasts visited the scene," says the News. "The American principle of standardization seems to be on the verge of complete vindication and likely as a result to win the confidence of all Europe, not only for the purpose of motor-car construction, but for the purposes of manufacturers of other high-grade machinery. All the principal motor car-making firms of Europe will be represented at the final dashes of the American cars around the wide curves at Brooklands."

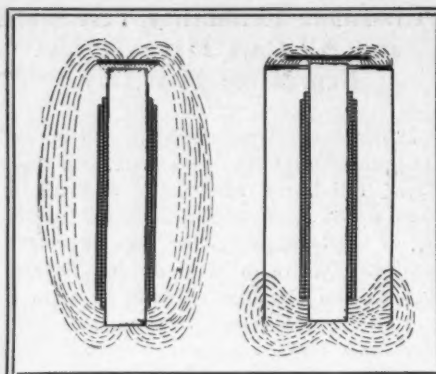
STUDEBAKER CAR AT FORT

Leavenworth, Kan., March 7—The Studebaker war car, carrying dispatches from General Grant from New York, reached the end of its journey at 11:32 o'clock this morning after having been 18 days 2 hours 32 minutes on the road. That the car was in trim was shown by the fact it made the last 10 miles in 12 minutes. Leavenworth celebrated the affair by sending out a delegation of motorists and tonight Mayor Everhardy tendered the keys of the city to Drivers Huger and Smith at a banquet given in their honor. The car's work being done, it started for Kansas City tonight. The drivers report a weary struggle all the way and since Chicago it has been a battle with mud. Before that it was the snow, so both the men were well pleased when the trip ended.

PERFECTING MOTOR CAR IGNITION

WHAT has been troubling us more than anything else about a motor car and its engine is to perfect an ignition system that shall be accurate and positive. Daimler used in his early engines a separate iron chamber which was attached to the cylinder and opening into it, which was kept very hot by an outside flame. Into this chamber was injected a spray of gas, or crude oil, which ignited by coming in contact with the hot walls. Later on he employed a small closed platinum tube inserted and opening into the cylinder for the same purpose. The great objection to this system was the inability to definitely fix the moment of ignition in relation to the position of the piston in the cylinder and to insure at all times a positive ignition for every explosion stroke; also, in not being able to make the ignition rapid enough to propel engines at high speed in order to increase the power of the engine without increasing its weight. Otto used another form of ignition, differing from Daimler's, employing a separate gas flame burning near an opening in a slide valve, which carried momentarily a part of the flame into an opening in the cylinder, but he experienced the same difficulties that Daimler did.

My topic is the present-day electrical ignition and the various systems employed, also their mechanical construction and relative efficiency. I do not wish to refer to any one particular make of ignition apparatus, for I believe they all have merits, and the fact that much of our apparatus in the past did not prove efficient was because the various makers of ignition apparatus were not thoroughly equipped with instruments for standardizing their work. It was not because they did not see the wisdom of thus making absolute measurements of all the elements entering into the design of ignition apparatus, but such instruments for making measurements of this kind had not been designed and we were all, therefore, laboring under difficulties and guessing at results. Also, many of our past failures in the efficiency of apparatus were not due so much to the principles involved as they were to poor workmanship and general design, not using the right kind of material or the proper proportions to give strength and durability.



FIGURES 1 AND 2

When I first began the manufacture of ignition apparatus, and particularly spark coils, some 3 years ago, I entered the field with some 15 years of experience in making spark coils producing from 1½-inch to 50-inch sparks in length, and naturally thought I was well equipped for making coils for motor cars, but I soon discovered that there are tricks to all trade, and while I was able to easily make a coil to produce a ½-inch spark, still it would not do the work satisfactorily, for it would not respond to high engine speeds; nor was the explosion very strong, and the battery would discharge in a very short time, due to a large current consumption and many other defects, reducing the life and durability of the apparatus, owing to the conditions to which they were subjected in a motor car, such as vibration, heat and cold, and one other element, the desire of every motor car driver to locate all his troubles in the ignition apparatus. If his valves did not seat properly and he had no compression the spark coil was at fault. If his spark plugs got sooted by too much oil and carbon, it was the fault of the coil. If the gasoline pipe got plugged and the carbureter did not get any gasoline, he would try to find the fault in the coil.

Having briefly rehearsed a little history familiar to you all, I will now state some of my observations and experiences during the past few years. We all know that what is needed is a very hot spark, of

great frequency, positive, and of a certain length, to penetrate the gap in the spark plug which is generally from 1-64 to 1-32 inch. We also know that with higher compression in the cylinder, the spark should be longer and of a higher voltage, or to be more precise, it requires a good ½-inch spark to jump a 1-32-inch gap at 90 pounds compression, and only a ¼-inch spark at 60 pounds. The heat of the spark depends entirely upon the watt energy consumed in the arc of the gap, or, in other words, the sum of the voltage multiplied by the amperage passing through and across the spark gap. But since the voltage across the spark gap becomes practically nothing after the resistance of the gap is broken down and the arc formed, the amperage then depends entirely upon the ohmic resistance of the secondary of the coil and the total energy induced in the secondary, and this energy again depends upon the mass and quality of iron in the primary, the ampere turns on the primary core, producing a certain total magnetic flux and the rapidity with which the primary current is interrupted, and from this analysis it would appear that the larger the iron core, or the larger the coil, the hotter the spark to be obtained. Quite true, but we must figure on the frequency of the spark necessary to operate an engine at high speeds, and here we meet with a limitation in the size of spark coils practical for gas engines. We find that we have got to magnetize and demagnetize the primary iron core to produce an induced current in the secondary and as the iron core and its vibrator have a fixed time lag, depending upon the mass or iron in the core, the mass of the vibrator and the length and tension of the vibrator spring, we can therefore produce only a certain number of sparks per minute in a certain size coil, as a certain frequency is necessary for a definite engine speed. This frequency would then determine the size of the coil, and the size of the coil determines the total electrical energy which can be produced by it in the heat of the spark. With a magneto, however, we have no limitations, for being practically a dynamo-electric generator, the larger we make the machine the more energy we can get in producing a longer spark and of

EDITOR'S NOTE—Paper read by J. O. Heinze before the Society of Automobile Engineers in Boston March 10 and 11, 1908.

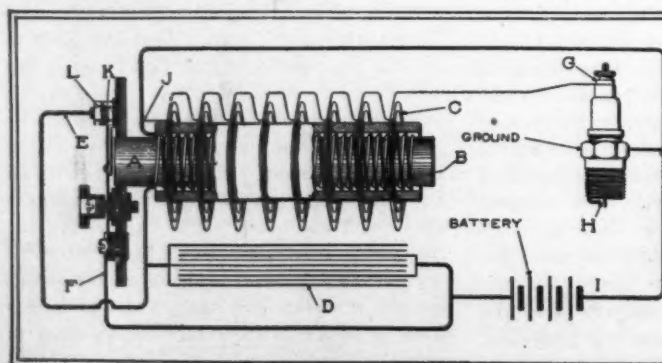


Figure 3.

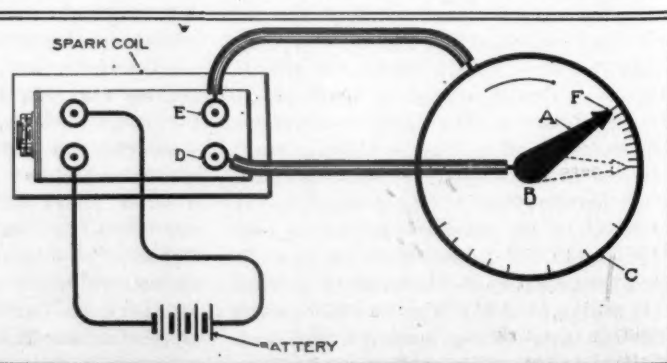


Figure 5.

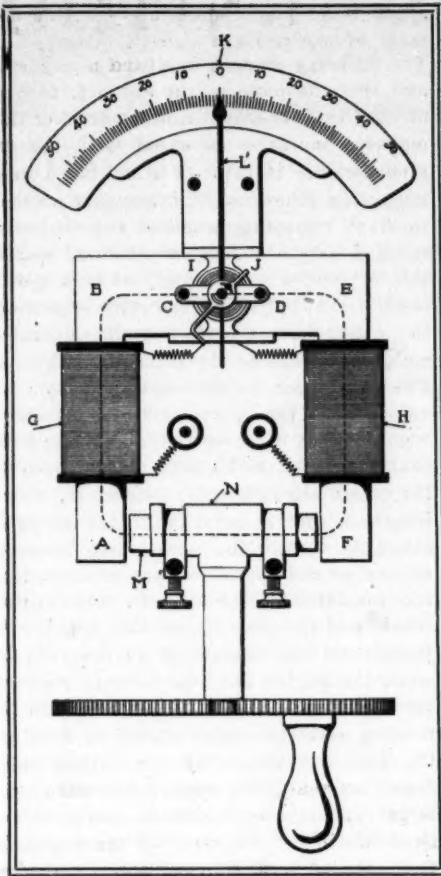


Figure 4.

greater amperage, and where a magneto is of the low-tension type, we have practically no lag, and could produce sparks far more rapidly than is necessary for present-day engine speeds. Magnetos which generate a low-tension current—mechanically interrupted—passing through the primary of a coil and stepping up the voltage by the secondary, have only the magnetic lag of the primary core and the armature core with which to contend, and this arrangement would make possible far greater engine speeds than would be mechanically safe. So I will have to confess from my experience that a spark coil using a vibrator operated by either a battery, magneto or small electrical generator will never produce the same results or efficiency produced by a magneto operating through a mechanical electrical make and break in the cylinder or on the magneto and stepping up to the voltage for jump spark ignition through a non-vibrating induction coil.

In order to demonstrate more clearly the principles involved in spark coils, and the means of arriving at standard results of efficiency, I have designed several instruments for making absolute measurements for the purpose of testing the efficiency of various kinds of coils and secondary windings, comparing them with the results obtained with magnetos. Figure 1 shows a primary iron core commonly employed in spark coils having wound consecutively upon it two layers of primary winding, through which pass the battery

current, producing magnetic lines of force which pass through the iron core, and from one end of the core through space to the other end of core, so completing the magnetic circuit. Figure 2 shows another form of primary core and winding having plates of iron on each side of core for the purpose of more thoroughly completing the magnetic circuit by iron to strengthen the magnetic field and to get a greater number of lines of force. And as the current induced in the secondary depends upon the strength of this magnetic field, the stronger we make it, the longer the spark and the greater the amperage produced from it without consuming any more current. This form of construction is used in the Heinze type of coil.

In Figure 3 we have the general arrangement of a spark coil; A is the iron core, B is the primary winding, C is the secondary winding which consists of some 20,000 turns, D is the condenser, consisting of layers of tin-foil insulated from each other by layers or sheets of mica or paraffined paper, and which is connected across the vibrator at E and F, one end of the secondary winding being connected to the spark plug at G, completing its circuit after jumping the gap H in the plug, and passing to the ground connection formed by the cylinder to one end of the battery circuit I and through the battery to the primary winding to which the other end of the secondary is connected at J. When the primary current passes around the primary winding it magnetizes the iron core; this then attracts the small iron plate of the vibrator, and in so doing breaks the electric current at the contacts K and L and as the current ceases flowing around the iron core, it quickly demagnetizes and this rapid decrease and increase of the intensity of the magnetic field is what causes a current to be induced in the secondary winding. The voltage or spark length produced by the secondary depends entirely on the number of turns of wire in series and the total magnetic flux and its rate of fluctuation from minimum to maximum in intensity. The condenser D is for the purpose of quickly absorbing the back rush of current from the primary at the moment of break and thereby eliminating the sparking at the contacts. Unless the condenser is properly proportioned in its relation to the primary winding, mass of iron and battery current, excessive sparking will be the results and consequent pitting of the contacts. It therefore becomes apparent that every element, such as the microfarad capacity of the condenser and the magnetic qualities of the iron should be carefully tested and standardized in order to get uniform and efficient results.

For the purpose of testing the magnetic quality of the iron and its ability to quickly magnetize and demagnetize I designed the instrument shown in Figure 4, known as a hysteresis tester, which consists of an iron core, A, B, C, D, E, F, of

U-shape. On the cores A, B and E, F are wound small coils G and H, and between the pole-pieces I and J is mounted a small circular iron core. Around this core moves a small coil of wire pivotally mounted, to which is fixed an indicating needle L moving over a graduated scale K. Small non-magnetic clock springs are secured to the coil pivot and keep the needle at zero. A direct current from a battery producing a certain number of milliamperes passes through the moving coil on its pivot and through the coils G and H in series. The iron core M of the spark coils to be tested is revolvably mounted between the cores A and F and completes the magnetic circuit. If we now pass a certain number of milliamperes through the coils G and H and the pivot coil, the iron core to be tested remaining stationary in the position shown in the diagram, we then get a certain deflection of the needle L over the dial K. If we now rotate the iron core M about its axis at a fixed number of revolutions we then get a new reading on the scale. The magnetism generated by the current in coils G and H and passing through the rotating iron core in the direction as indicated by the dotted line, reverses in direction through the rotating core twice during every revolution. If we now rotate this core 2,000 revolutions per minute we would get 4,000 reversals of magnetism. The number of degrees of deflection of the needle on the scale depends upon the strength of the magnetic field, and if the iron core does not readily demagnetize and magnetize during its revolutions it would naturally reduce the total strength of the magnetic field and the indicator would show a small reading on the scale. So by this method we can show absolutely whether an iron core is susceptible to rapid magnetic changes necessary for producing a coil to give a great frequency of sparks per minute, and for the

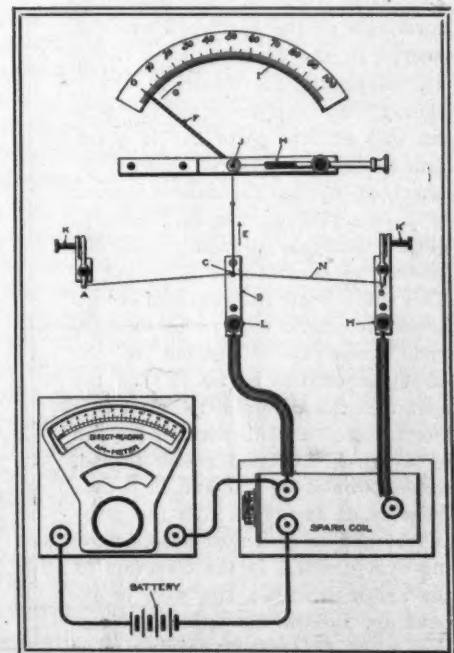


Figure 6.

purpose of seeing that our iron is twice alike, for if it is not, repeated annealing will usually make it so.

To test the frequency of the sparks from a coil I designed the instrument shown in Figure 5, which consists of a rotating needle A on its axis B, within a graduated ring C, of a known diameter and divisions. One end of the secondary D, of the coil connects to the rotating needle A, and the other end of the secondary E, connects to the ring C. The needle A, at its point F, is separated $\frac{1}{4}$ inch from the ring C, so that sparks leap across this gap from the point F to the ring. If we now rotate the needle a certain number of revolutions and we have a certain circumference in the ring, by multiplying the number of the sparks per inch, times the number of inches in the circumference of the ring, times the number of revolutions of the needle, we then get the number of sparks per minute. With this instrument we can easily test different makes of coils having various kinds of vibrators, and can also learn the effect on the number of sparks produced per minute by varying the tension of the vibrator as well as determining the amount of current consumed, thus arriving at the best form of construction to give the greatest efficiency.

Figure 6 is an instrument for measuring the approximate temperature of the spark of different spark coils and magnetos. This is not determined in Fahrenheit degrees, but in heat units. The instrument is designed on the principle of utilizing the expansive effect of a hot wire to move an indicator needle over a graduated dial, and is constructed as follows: A fine copper wire is stretched between the metal contact posts A and B, the tension of this wire being regulated by the adjusting screws K and K'. To the center of the wire at C is fastened a small copper stud which comes to within 1-32 inch of the metal plate D. The secondary terminals of the spark-coil are connected to the binding posts L and M, completing its electrical circuit through the copper wire N, across the gap at C to plate D. If a certain amount of primary current, determined by an accurate ammeter, is passed through the coil, we will get a continuous secondary spark between the stud C and the plate D. This spark heats the stud and in turn heats the copper wire which expands and causes an elongation in the direction of the arrow E. To the center of the wire and the stud C is also fastened a small wire, to the end of which is fastened a silk thread, wound around a pivot and kept taut by a small spring H. To the pivot is fastened an indicator needle moving over a dial I in the direction of the arrow G, when the wire is expanding, and in the opposite direction when contracting, giving us a certain reading depending entirely

upon the temperature produced in the copper wire by the heat of the spark at the gap C. When the rate of cooling, or radiation, of the wire equals the production of heat from the secondary current, the needle will then come to a stop and no fixed time measurement is necessary. In order to test various coils, it is first necessary to see that they all consume the same amount of primary current at the same voltage. When comparing the spark from a magneto with a coil, I found that the magneto produced from 500 to 1,000 per cent more heat units in the spark gap of the plug over a coil, so the importance of having an instrument making absolute measurements possible, thereby eliminating the personal factor, may be appreciated.

Figure 7 is an instrument for measuring the amount of lag in the secondary spark from the moment the primary current is closed, and my object in designing this instrument was to clear up a prevailing idea in the minds of many motor car operators, that by advancing the timer an early ignition is produced when the piston is still coming up. From the many experiments which I made in ignition timing, I found that it was impossible to advance the spark more than 10 degrees at an engine speed of 1,000 revolutions per minute without observing a slight decrease in power; if the advance was carried further, the engine would gradually come to a stop, or kick back. The higher the engine speed the more the spark can be advanced, but no such advance is possible as would be indicated by the position of a timer apparently capable of a movement of 90 degrees or more. This great amount of advance of the timer is necessary to overcome the enormous lag in vibrating spark coils, but no such advance is possible with a magneto, for the secondary

spark takes place immediately at the moment of the primary current interruption. The only lag present is entirely magnetic, and there is none in the contact, for the mechanically operated contact breaker in a magneto increases in speed with the engine, but the vibrator of a coil has a fixed lag or, in other words, takes just as long to start vibrating, whether the engine is running 100 or 2,000 revolutions, and it should respond more rapidly at high speeds than at low, but it is apparently impossible to make such a magnetically operated make and break in the form of a vibrator. The instrument for demonstrating this advance spark theory consists of a model of a gas engine with its cylinder and piston, connecting rod and crank, but secured to the crank pin is a small pointer K, which rotates within a metal ring L, clearing it about $\frac{1}{4}$ inch. The wires from the secondary of the spark coil are connected to the insulated metal ring L, and to the crank and pointer K, so the spark will jump from the pointer K to the ring L, while the engine is in operation. We now set the timer in such a position that in turning over the engine slowly by hand in the direction shown by the dotted lined crank, we will get a spark when the crank is at the point of maximum compression, as shown in the diagram. If the engine is now speeded to 1,000 revolutions per minute without moving the timer we would find the spark jumping across at B or, in other words, it would be 90 degrees late. This lateness of the spark is entirely due to the lag of the vibrator and the magnetic lag of the iron core, and we must advance the timer an equivalent amount to balance up the two. By varying the speed of the engine the spark moves from the position A' to B'. My object in designing this instrument was to prove that the ignition in a gas engine should take place at the highest point of compression, and it approximately does so when the engine develops its greatest power, also that the time required to ignite the charge is very small and never requires more than a few degrees of advance.

Note—It is the policy of Motor Age to print concise reports of all valuable papers read before engineering or other societies and its readers are at liberty to use the columns of the Readers' Clearing House in commenting pro or con on the facts set forth in the papers. Free discussions will be published, but Motor Age does not hold itself responsible for the views of those taking part in the dispute. All communications must be signed as an evidence of good faith. Motor Age reserves the right to terminate discussions along any particular line as soon as it loses general interest and becomes a trade dispute between two or three rival makers. The discussion by non-trade readers is also solicited.—Editor.

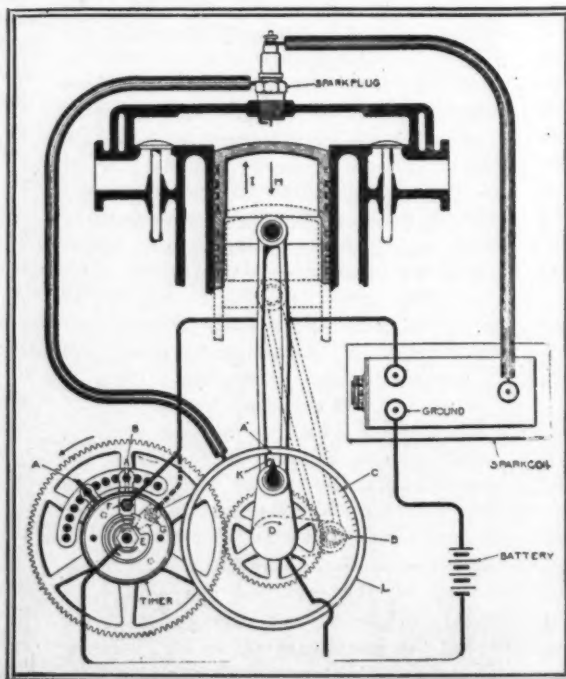


Figure 7.



Legal Lights and Side Lights



HEARS BAY STATERS KICK

The taxing of motor cars according to horsepower is the one bugbear of the Massachusetts motorists and each year it crops up in the state legislature. This year it was supposed to have been buried when unexpectedly it made its appearance and the hearing on the proposition was called for last Thursday afternoon, a time when the local dealers were so busy with their show preparations that they could not get up there. The hearing was the result of Governor Guild's recommendation in his message at the first of the year. Strangely enough, in this same message, while he proposes a tax on motor vehicles heavier than the one now imposed, a little further on in very strong language he urges the members of the legislature not to attempt anything in the way of double taxation, which is regarded as not very consistent for a governor. At the hearing the governor's recommendation, curiously enough, was favored by some motorists, Colonel E. D. Sohler, Francis Peabody, Jr., Judge James and another man. They all belong to the Safe Roads Association. Colonel Sohler said he would not object to the tax going as high as \$30 or even \$50 for the big cars. Chairman McClintock, of the highway commission, who has wanted this measure passed for 3 years, also spoke and presented figures stating that the highways would need \$166,000 for repairs this year because of the wear and tear of motor cars, he alleged. But he neglected to state that this sum represented 2 and 3 years' wear in some sections. He also neglected to state that Massachusetts today is wasting its money sticking to macadam instead of trying other materials that will not wear away quickly. W. H. Chase, of the state association, opposed the bill, stating that the present law was good enough, and last year the motorists were soaked three registrations in 1 year. He was followed by James T. Sullivan, who called attention to the fact that New Jersey is now suffering from too much inimical legislation which is going to cost her thousands of dollars until a change of front is made. He also stated that the commonwealth now derives in taxes thousands of dollars from the factories making motor cars and the others engaged in making lamps, tops, etc. Therefore, men making this possible deserve some consideration. The committee had been sort of weary until he began to talk and stated that if the members of the legislature continued their efforts to put too much of a burden on the motorists the latter would turn about and start a fight for their rights that would cause some members the loss of their seats in future. He went on to point out the immense benefit the industry was to the state, giving

hundreds of young men employment and keeping them out of mischief. When he told the committee that such a measure would pave the way to giving jobs to friends, and turn the highway commission into a political machine that would perhaps ruin its usefulness the committee began to regard the hearing as something of importance. Finally, he showed that in a few years when road building has been perfected and motor cars will not destroy them, it would be next to impossible to repeal any legislation now enacted, and as a result the immense sums paid to the state by the motorists would be in the treasury only to be appropriated for some other purpose, creating a state of affairs whereby the motorists would be paying for something entirely foreign to roads and motor cars. Secretary Fortesque, of the Bay State A. A., also protested against the recommendation.

WHEEL TAX IN ENGLAND

In all probability the motorists of Great Britain will have to pay a wheel tax similar to that which the city of Chicago wishes to impose, only in the case of the foreigners the fees to be exacted are placed on a more equitable basis; that is, the owners of horse-drawn vehicles and the motorists pay about the same. There is no fight being made on the proposition outside of the fact the motorists are pulling wires to have a certain portion of the receipts go to the maintenance of roads as will be done in Chicago. The British motorists have sent deputations to the chancellor of the exchequer, which have argued with that official, who has diplomatically heard them but has promised nothing. It is understood the taxation will be based on weight rather than horsepower, and the Motor Union urges that chassis makers and body builders be required to stamp the weight of the body and chassis upon their respective productions, the user of the car to return the sum of the weight to the proper authority. The motorists urge the creation of a central highway department, which would have something like \$12,500,000 for road use. The scale of taxation proposed by the Motor Union is as follows: Motor cycles weighing less than 224 pounds, \$1.87; motor cycles weighing less than 784 pounds, \$3.77; motor cycles and motor cars not exceeding 1,344 pounds, \$4.90; motor cars exceeding 1,344 pounds and not exceeding 1,680 pounds, \$9.80; motor cars exceeding 1,680 and not

exceeding 2,400 pounds, \$14.70; motor cars exceeding 2,400 pounds and not exceeding 2,800 pounds, \$19.60; motor cars exceeding 2,800 pounds and not exceeding 3,600 pounds, \$29.40. For each additional 560 pounds \$9.80 is charged. Trade and public service vehicles are to pay \$1.25 per ton of registered axle weight. Horse-drawn vehicles are to be taxed thus: Two-wheeled, drawn by one horse, \$4.90; four-wheeled, drawn by one horse, \$9.80; four-wheeled, drawn by two horses, \$19.60; four-wheeled, drawn by more than two horses, \$29.40. Trade and public service vehicles are to pay half the above rates. In suggesting this table the motorists say that in return the speed limit on open roads should be abolished.

ARE AFTER SAFE ROADS

Serious indeed was Heman S. Fay, of Marlboro, Mass., a lawyer, when he presented his side of the case in a petition to the Massachusetts legislative committee on roads and bridges last week to make the penalty for reckless driving of a motor car when it injures anyone \$1,000 fine and 12 months' imprisonment; for gross negligence, \$5,000 fine and 3 years, and where death results, \$10,000 fine and 10 years. The motorists did not consider it seriously enough to offer any strenuous opposition after Mr. Fay stated that cars of 90 and 100 horsepower that went at 60 and 70 miles an hour passed through his city daily. On the same day W. S. Cherrington was heard on his bill that calls for a continuous warning noise on every motor car. When it was suggested that this could be accomplished by simply removing the muffler Mr. Cherrington explained that it must be something as pleasant as sleigh bells. When those two petitions were disposed of the committee took up the safe roads bill that gives the highway commission authority to summon witnesses to hearings, and to revoke licenses for 60 days immediately upon a conviction of recklessness or drunkenness while driving a car, and in case a man appeals his case the suspension to remain in force until he is acquitted. Another section calls for visiting motorists to display two numbers, one front and one rear, as on Massachusetts cars. It also asks that no one under 18 be allowed to operate a car and there was some talk of putting a limit on the extreme age end, too. It also carries a penalty for running away after an accident and for trying to conceal one's number. This bill, or the greater part of it, will be reported. The hill-climbing bill was also heard last week and that wound up hearings on motor bills, so the battle, if any there is, will now be transferred to the legislature. It is safe to say the motorists will watch every point.



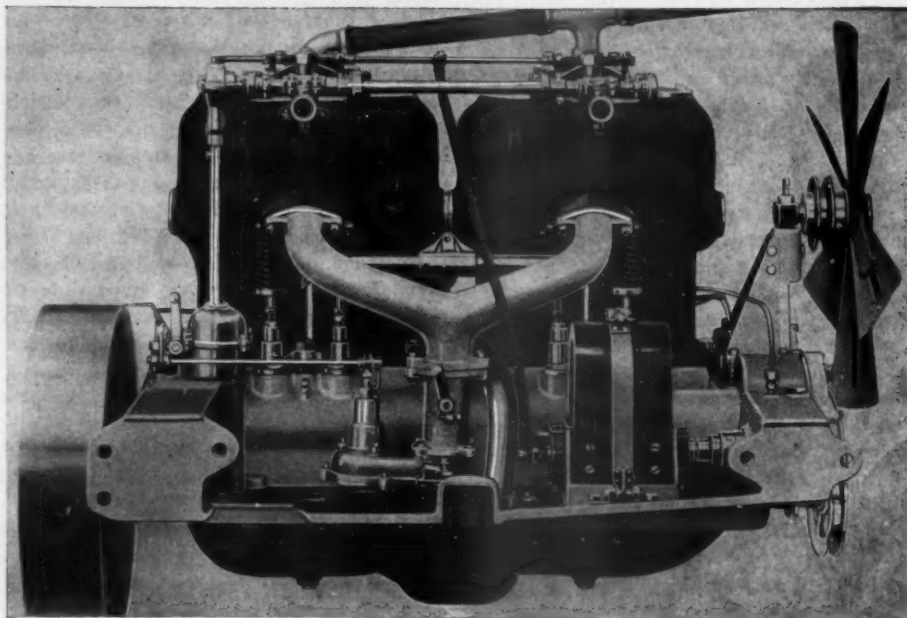


FIELD OF MOTOR CAR DEVELOPMENT



THE season of 1908 marks the beginning of an epoch in the life of Rainier cars in that the Rainier Motor Car Co. has found a permanent factory home of its own on a 60-acre tract of land bordering on the Saginaw river at Saginaw, Mich., where, during the past 10 months, a factory has been reared and occupied, with a capacity for half a thousand or more cars per year, although for this season the plans are for an output not in excess of 300 machines. The factory, under the management of James G. Heaslett, who designed the 1908 Rainier, is equipped with the usual array of automatic machines, steel-treating ovens, testing departments, gear-cutting machinery, etc., and in the grinding department—a room by itself—are large ventilators for withdrawing the metal particles. Next in importance to the possession of a new and permanent home is that the 1908 Rainier is a Rainier-built machine. The reader will recall that heretofore during the seasons of 1905-06 and '07 the Rainier chassis was built at the Garford factory and sold to the Rainier Co. in New York, which consisted of a selling organization. Now all is changed; the Rainier is a home-made machine, carries its own characteristic motor peculiarities and an examination of it reveals not a few designs that were new to the show enthusiasts who viewed it for the first time at the Grand Palace show in New York last October.

The new Rainier is an enlargement over last year's model. The old motor of 30-55 horsepower has been supplanted by one rated at 45-50 with 5-inch cylinder bore and $5\frac{1}{4}$ -inch stroke; the wheelbase totals 119 inches, short for the horsepower of the vehicle; the wheels are 36 inches in diameter, carrying 4 and $4\frac{1}{2}$ -inch tires, larger than those used in the 3 first years of the company's history; a four-speed selective gearset, with four forward variations, has taken the place of the former three-

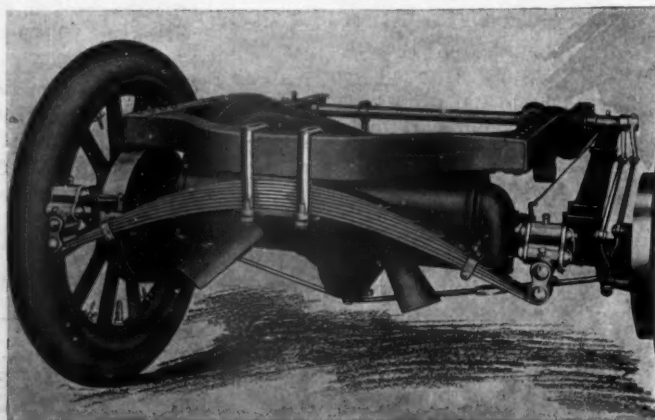
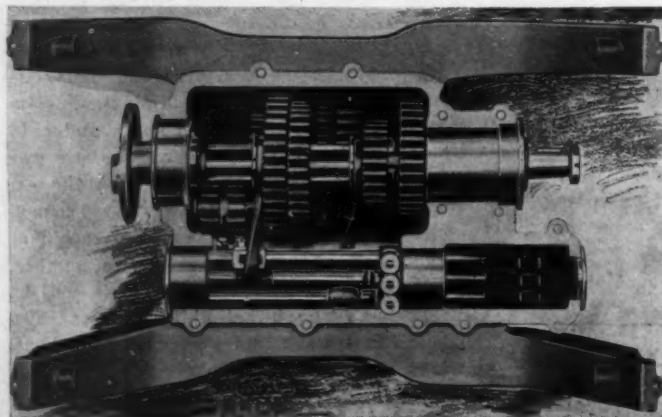


RIGHT SIDE OF RAINIER MOTOR WITH CARBURETOR AND MAGNETO

speed progressive set; brakes—regular and emergency—are both metal-to-metal expanding sets operating on two concentric drums on the rear wheels; the make-and-break ignition, associated with the name of Rainier since its inception, remains but in decidedly modified and simplified form. From radiator to tail lamp are many niceties of construction, on all of which are imprinted the marks of careful workmanship and design.

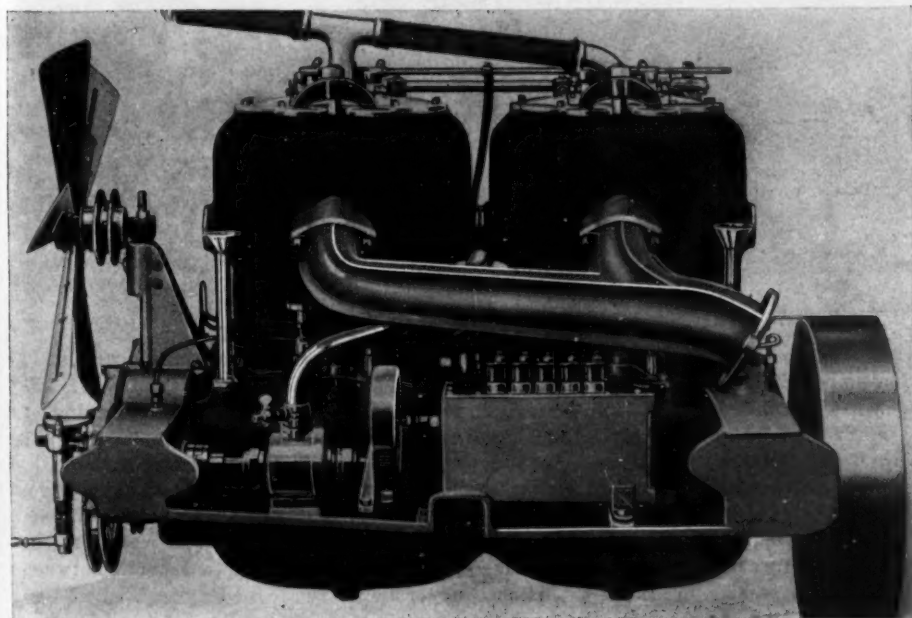
Combined in the motor are many of those standard conceptions met with on all sides in America and abroad. Besides casting the cylinders in pairs with opposite chambers for housing the valves, the designer has carried his symmetry of layout still further and achieves a neat balance by carrying the carburetor and magneto on the right side and the lubricator and water pump on the left; using a short

shaft with jaw coupling for the magneto and one shaft for the pump and lubricator, the pump resting on the crankcase web opposite the forward cylinder pair and the oiler opposite the rear cylinder pair, but not driven at the speed of the pump, rather having a reduced speed by means of a reduction through a pinion on the end of the pumpshaft and a large gear on the driveshaft of the lubricator. Casting an integral web between the motor-supporting arms eliminates an under pan for the motor and further provides good support for the magneto, lubricator and water pump, and for the carburetor if so desired. Half-time gears are encased; the adjustable ball-bearing fan is belt-driven from the crankshaft and is mounted on a pedestal on the housing for the half-time gears. Intake and exhaust manifolds are one-piece pipings, the intake of the T prin-



RAINIER SELECTIVE FOUR-SPEED GEARSET AND REAR FRAME CONSTRUCTION

ONE RAINIER MODEL FOR 1908



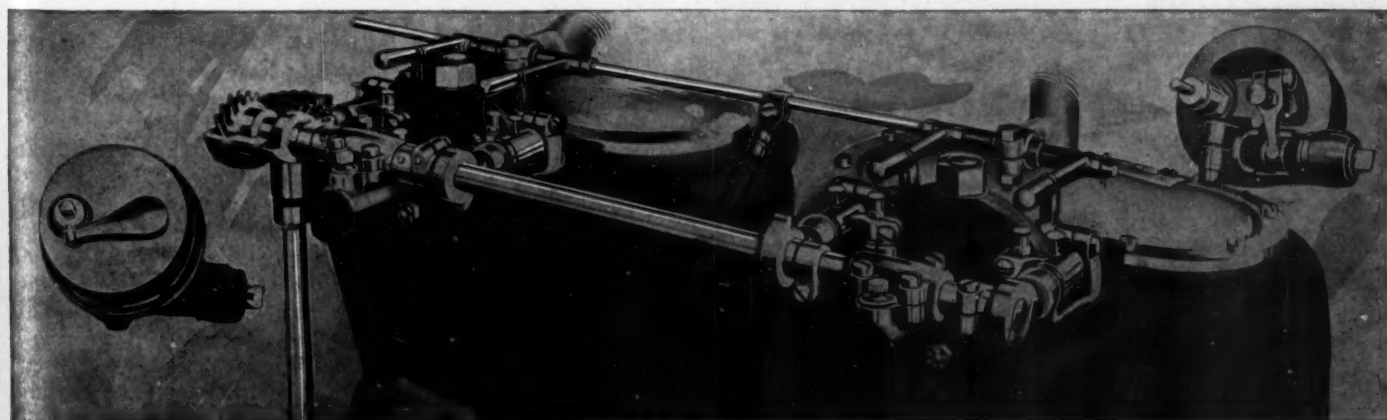
PUMP AND OILER ON LEFT SIDE OF RAINIER MOTOR

ciple, the exhaust a tapered horizontal one with a branch to each cylinder pair.

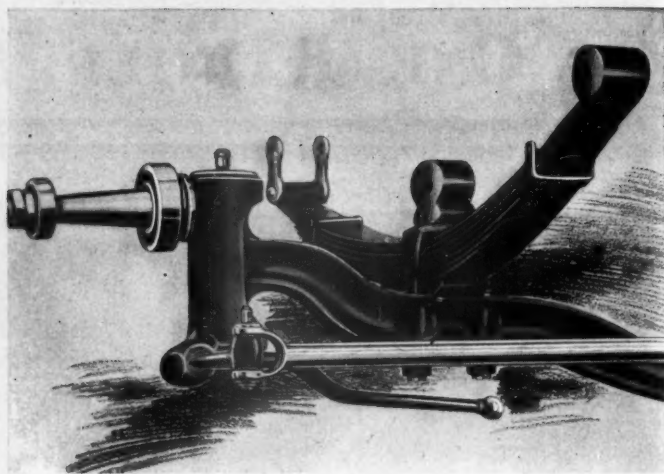
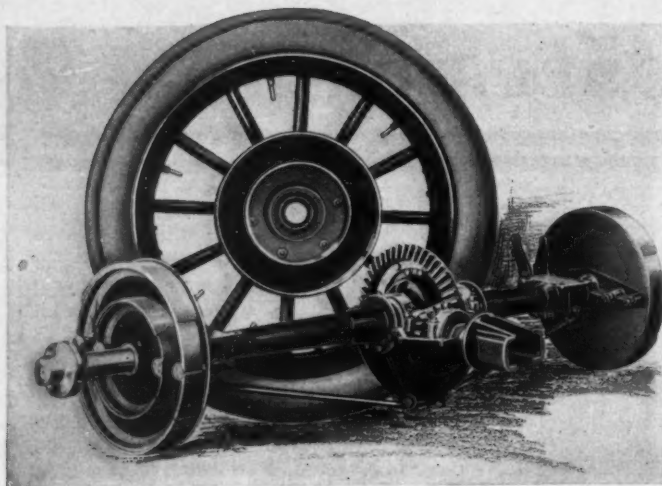
It is not in the motor symmetry, however, that the greatest interests exists, rather the make-and-break ignition merits attention because of it being of different design from those previously seen on American cars and one characterized by accessibility and simplicity. The igniters—the make-and-break or hammer and anvil—parts are carried above the intake valves, both hammer and anvil being in one plug that takes the place of the cover for the opening in the valve chamber dome, held therein by a nickel steel bridge with a single nut securing the bridge. Loosening and removing the nut allows of lifting one or both of the igniter plugs out or of removing the valves. The make-and-break is accomplished from the intake camshaft by a vertical driveshaft

rising at the right rear of the fourth cylinder casting, which shaft transmits through gears to a horizontal layshaft lying along the outer top of the intake valve chambers. On this horizontal shaft are four adjustable cams, one for each cylinder and each clamped to the layshaft, permitting of loosening them one at a time and timing the individual cylinders as desired. Each cam bears against the end of a short plunger rod carried in the igniter plug and shown in the upper right of the ignition illustration. This rod is encaged and carries on its center a double collar between the flanges of which is the yoked end of an arm attached to the rocking member of the make-and-break parts. At each side of the double collar is a stiff coiled spring. The revolution of the cam pushes the plunger bolt endwise against the tension of the spring, but the instant

the cam is passed the spring brings the plunger bolt back to its normal position. This plunger bolt slides in an oil-packed sleeve, the spring is encased in oil, which is claimed to retain the spring tension as well as reduce the friction of the operation. The inner ends of the hammer and anvil parts are faced with iridio-platinum. Current, provided by a Simms-Bosch low-tension magneto, is transmitted by a single wire to the longitudinal bus bar lying over the cylinder heads and from this by knife switches to the top of the stationary or anvil members of the igniters. In rectifying the timing with this system it is but necessary to turn the flywheel to its marked position for the cylinder undergoing correction, after which the cam on the layshaft is loosened and turned until the cam touches the end of the plunger or hammer rod, then tightening the cam on its shaft. The advancing and retarding of the ignition is by a sliding sleeve on the upright driveshaft, and to prevent damage in case of a motor backfire the spiral gear on the bottom of this shaft, and which takes the drive from the intake camshaft, is secured by a ratchet device. Carrying all of the ignition parts on the top of the valve chambers places them where inspection or work on them can be done without any of the other motor parts interfering; using but one vertical driveshaft for the four igniters leaves the four intake valve springs free for removal as well as simplifies the intake side of the motor. Heretofore, four upright driveshafts were needed, one for each cylinder, and the elimination of these parts reduces the number of parts within the crankcase as well as greatly reduces the number of pieces needed in the ignition system. On the dash is a cutout switch for stopping the motor and on the steering wheel is the advance or retard lever. To facilitate the magneto removal it connects with its driveshaft through a jaw coupling and is



MAKE-AND-BREAK IGNITERS ON 1908 RAINIER CAR SHOWING IGNITION CAMSHAFT



RAINIER EXPANDING DOUBLE DRUM REAR-WHEEL BRAKES AND FRONT AXLE END DESIGN

secured to its base by a metal strap spanning the horseshoe magnets and with a buckle at the top of the magnets.

Structurally considered the motor is a conventional one, comprising in its make-up such recognized designs as: Three-bearing nickel-steel crankshaft; camshafts housed within the crankcase and having integral cams; I-beam forged connecting rods with marine type of lower ends; long pistons with four rings carried above the wrist pin and oil grooves at the lower end; removable lower pan in the crankcase, with a central partition for oil retention under the two-cylinder pairs; cylinders with their walls bored, reamed and ground; pistons ground, polished and lapped; crankshaft carried on bronze bearings with babbit lining, and camshaft carried on plain bronze bearings.

The carburetor possesses an auxiliary air valve which is controlled from the car dash, thereby enabling the driver to secure any mixture proportion suitable to the speed or climatic conditions. In the water system use is made of a large top plate for each cylinder pair, which provide access to the jacket spaces and reduces the casting weight slightly. The conventional force feed lubrication supplies oil direct to the crankshaft bearings and half-time, pump and magneto gears as well as furnishing a splash within the crankcase for the cylinders, pistons and connecting rods.

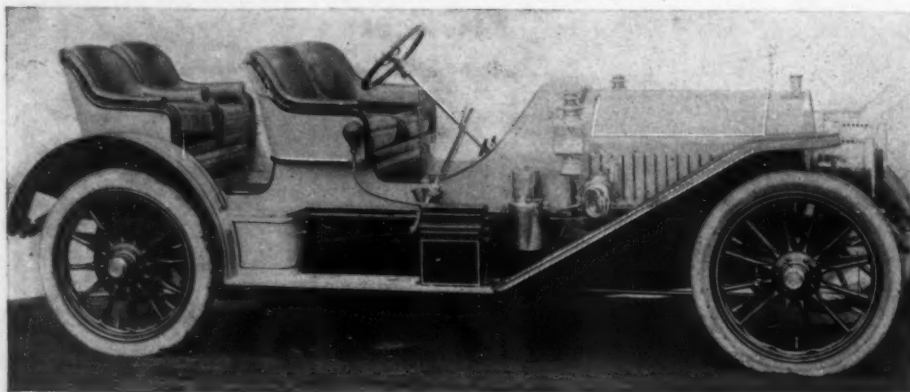
Once the motor review is passed the im-

portance of the car changes to that of the use of imported ball bearings in the gear-set, in the rear axle parts and for carrying the front road wheels, a plain bushing being used to take the car load in the steering knuckles. The clutch has in all seventy steel disks housed in oil in a tubular case secured to the flywheel, the latter being of such diameter as to allow of fan spokes outside of the hub portion to which the clutch casing attaches. Engagement of the disks is by a single spring surrounding the shaft leading to the gear-set. In the gearset the mainshaft is placed above the countershaft, this construction allowing of the use of sealed end bearings for the countershaft. Direct drive is on the third speed, with a gear reduction from the motor to the rear axle of three to one; on the fourth speed this reduction is two and one-quarter to one. Shafts and gears of the set are of nickel steel, heated in the special ovens of the company, with the gears cut on imported German gear cutters. Lying to the side of the mainshaft are the three shifter rods with the U slots at their forward ends for receiving the end of the drop arm on the sleeve carrying the change-speed lever. The entire device operates in oil and the presence of plungers for the shifter rods prevents the meshing of two sliding-gear units simultaneously. But a glance at the transmission illustration with its cover removed will reveal the peculiar supporting arms,

longitudinal rather than transverse, and which attach to cross members of the frame, each supporting arm having a shoulder for resting on the top of the frame crosspiece to which it attaches.

Backward from the gearset is the driveshaft with its two universal joints and paralleling it on the left is a V form of torsion bar with its apex secured between upper and lower coiled springs carried in a vertical sleeve from a cross member of the frame and its spreading arms spanning the differential housing. In the rear axle attention is drawn to the use of a differential housing formed as a dropforging and to the use of manganese bronze tubes for housing the nickel steel driveshafts of the axle. The short pinionshaft which couples with the driveshaft from the gearset has a ballbearing in front of and another in the rear of the pinion. Carrying the road wheels on the axle tubing gives a floating construction. The brakes, as already mentioned, are both expanding sets, the pedal-operated pair for regular use expanding within the larger drum.

A brief resume of the running gear discloses the peculiar construction of the rear part of the frame in which the back transverse member curves rearward midway of the side members and attaches direct to the cross member of the platform spring; a construction which does away with the separate bracket attached to the crosspiece as used on not a few foreign cars. Springs are made regularly with leaves $2\frac{1}{4}$ inches wide; the frame is dropped $2\frac{1}{2}$ inches in front of the axle and is horizontally offset alongside of the motor. The forward axle of I-beam cross section has two bores for taking the arms of the spring clips instead of having a broad seating for the spring and employing two clips of each spring. The axle end is a vertical hub with a jaw end on the wheel spindle and the spindle connected at the top of the jaw, thereby permitting of using large wheels, and giving the forward end a low carriage, a fact which, connected with the dropping of the frame side members at the rear, gives a low center of gravity. In the steering gear is a worm-



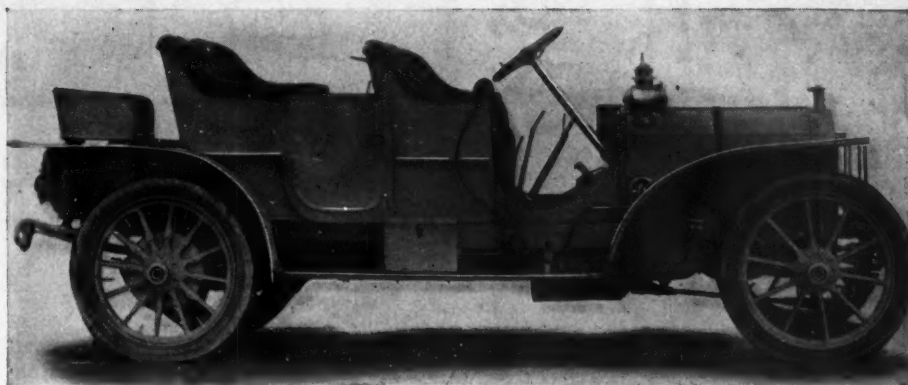
LOCOMOBILE 40 FOUR-PASSENGER ROADSTER

nut-rack-and-pinion combination. On the bottom of the column is a quadruple thread screw, on which the square nut travels; the rear face of the nut carries a rack, which in turn engages the pinion that gives an oscillatory movement to the steering arm. Rainier bodies, made of aluminum with ash sills, are built in touring car, limousine and landaulette lines, all of the convex pattern.

NEW BODY STYLES

Two of the latest additions to the roadster and semi-roadster class are the four-passenger Packard, carrying a single rumble seat in the rear and which style has been designated the close-coupled car; and the new Locomobile 40 runabout, which is being exhibited for the first time at the Boston show this week. The aim of the Packard Motor Car Co. in its close-coupled car has been to secure a light machine which the owner may drive and carry along with him other friends and still have room for the mechanic in the rear. In achieving this end the standard Packard 30 chassis has been used, an even distribution of passenger weight between the front and rear springs has been obtained, and the rear end of the body provides storage space for bags and touring necessities. In the Locomobile runabout the chassis resembles the standard type I 40 in most particulars, except that the springs are lighter and the seats made lower. A strong effort has been made in the design of this car to secure comfortable and conservative body lines, and in doing this the seats have been made larger than in the average roadster, with accommodation for two additional passengers on seats carried over the artillery box. Should a three-passenger machine be desired, a single seat can be centrally positioned, or, if occasion demands, both rumble seats can be removed. With both seats removed sufficient room remains between the artillery box and the front seat to carry a trunk or a large wicker hamper. If desired, the artillery box can be removed.

A coupe body style has been brought out by the Northern Motor Car Co., which is



PACKARD 30 WITH FIVE-PASSENGER CLOSE-COUPLED BODY

carried on the company's standard 24-horsepower two-cylinder chassis. Of interest in this vehicle is that it is an inside-operated machine, there being no side levers of any nature and with many of the operating parts grouped on the steering column. The front lamps are, according to the latest northern practice, carried on the tops of the front fenders, the aim being to avoid long shadows on the road surface, which occur when lamps are carried low. The coupe body is conventional with its side, rear, front and door windows.

In its Frayer-Miller taxicab the Oscar Lear Automobile Co. follows that recognized landaulette style so well suited for city livery work, in that the top folds back for fine weather and provides a well-enclosed car for inclement weather. The car is made with a short wheelbase, because of its zone of operation being in the congested sections of large cities, and has the patented Frayer-Miller protecting fenders which have integral mud flaps.

STRAW IN TIRES

A rarely-employed method for running on a badly-damaged tire casing is to stuff it with hay, straw, leaves or some similar material. This is infinitely preferable to the habit sometimes indulged in by careless motorists of coming in on a flat tire, with the almost certain result of ruining a valuable casing, unless the distance so traveled does not exceed a few hundred

feet. The stuffing material, of whatever sort is used, must be rammed into place as tightly as possible while one bead of the shoe is in place, the process being continued to the point where further insertion of material would make it impossible to spring the other bead of the tire into the rim. Of course the tube is first removed, as well as the large lugs, these latter being in the way and not capable of proper manipulation in seating the tire because the stuffing does not permit them to be lifted and dropped as when air is used. Also the slight circumferential creep of the shoe about the wheel while the car is running is not so objectionable as it would be were there a valve stem to resist it, though it is by no means to be desired, especially if it is one of the driving wheels that is affected. In any case, the disabled tire should be favored as much as conditions will permit by slow and cautious running. Used this way the extemporized upholstery can be depended upon to do duty for many miles. With hard driving or very bad road surfaces it will not do so well, the packing gradually pounding down and disintegrating. This pounding down is most noticeable in the first few miles, for which reason it is well after stuffing the tire to take along some extra material to add to that already placed if a very long run is anticipated before a proper repair or replacement can be had.



FRAYER-MILLER LANDAULET TAXICAB—NORTHERN TWO-CYLINDER COUPE CAR



The Readers' Clearing House



MISLEADING PRESS REPORTS

New York—Editor Motor Age—While it is commendable and perfectly legitimate on the part of those entering cars in sealed bonnet contests and endurance runs to take every fair advantage in an endeavor to make a good showing and get all of the credit to which the performance of the car entitles it, it is to be regretted that in many cases the contestants seek to obtain advantages which, while allowable under the rules, are frequently misleading to the general public. The reports of these contests in many papers unconsciously lend themselves to this end. For instance, in an economy contest, where the object is to ascertain how many miles a car can travel on 1 gallon of gasoline or oil, and speed does not enter into the contest at all—in fact, as a general rule, increases the consumption of gasoline and consequently lowers the standing of the car as far as the objects of the run are concerned—the time of the finish of the cars is given. For instance: "Blank car, driven by So-and-So, was the first car to finish and was followed 7 minutes later by So-and-So." The headlines over the article frequently emphasize the fact that a certain car was "the first in at the finish," whereas from a fuel consumption standpoint it might have been the last car in the contest. In sealed bonnet contests and endurance runs it will be noted that a car of a certain make was the "first to check in at the club house," thus implying that the contest was a race, whereas, as a matter of fact, if the car which really came in second had speeded up and come in first it would have been penalized for doing so. Manufacturers are spending considerable money in entering their cars in contests promoted by the various clubs, and the interest which is being aroused by the increasing number of these events results in revenue to the motoring organizations, to the benefit of the trade and, of course, to the manufacturers in question, and the clubs are showing a commendable disposition in endeavoring to formulate rules and conditions which will be as fair and just as possible, and the suggestions here made are given with a view to correcting some of the abuses, which seem to be increasing. Another matter which the news stories might well take note of is the reporting of accidents to cars. In the Long Island Automobile Club economy contest a Lozier car driven by David Mahany skidded into a ditch, and two wheels were broken. Three different papers stated the axle was bent or smashed, and one paper said that the car was "demolished," while as a matter of fact the only damage to the car was the breaking of the wheels, every other part of the mechanism being perfect.

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and opens its columns to a discussion of pertinent subjects. Correspondence is invited from subscribers and others.

This might seem a small matter to the reporter who does not have facilities for obtaining actual facts, but unless he has an opportunity of verifying them, the statements should be qualified, for it results in more injury to the reputation of the car than the reporter imagines, and it is no doubt only thoughtlessness that leads to the publication of these erroneous reports.—C. A. Emiser.

PROTECTIVE TREADS ON TIRES

Syracuse, N. Y.—Editor Motor Age—Are there any reasons why extra treads for tires made and sold for the purpose of protecting the shoes from cuts, etc., should not be used? Do they cause the rubber of the tire to melt from overheating?—A. C. Fredenburgh.

The danger in using protective treads is only of chafing between the attached tread and the surface of the tire. If the tread is reinforced with steel rivets, as is usual, and these rivets touch the rubber of the tire, they are certain to chafe grooves in it. For this reason a tread having the inner ends of the rivets covered by a strip of leather should be selected. It must be remembered that until the rivets are worn away they carry virtually the entire weight of the car, and that no flexible leather into which the rivets are fastened will prevent the inner ends of the rivets from being pressed inward by the load they carry, to a much greater extent than the leather itself to which they are fastened.

HIGH VS. LOW COMPRESSION

Kansas City, Mo.—Editor Motor Age—What is the theory of a high-compression engine showing higher efficiency than one of lower compression.—A. G.

The theory of high compression is twofold. The first and simplest reason for it is that the combustible mixture burns faster when highly compressed than otherwise. For this reason high compression is used in high-speed engines, or when a gas of low-heating value, such as producer gas, or a slow-burning fuel like alcohol, is employed. The second and more technical part of the theory rests on the fact that heat and work are convertible forms of energy, and that to obtain the maximum amount of work from the combustion of

the charge it is necessary to expand that charge as much as possible after it has been ignited. Any compressed gas, hot or cold, cools on expanding, and if it can be expanded, say, five times, its temperature at the end of the expansion will be lower than if it is expanded to, say, only twice its volume at the beginning of the power stroke. If the engine has a clearance space equal to the piston displacement, it will compress its charge to only half its volume at atmospheric pressure, and will expand the burnt charge to only twice its volume when compressed. On the other hand, an engine whose clearance space is, say, one-quarter its piston displacement, will compress its charge to one-fifth its original volume, and will expand it again to the same amount, that is, to five times its volume when compressed. Now, the work done in compressing the gas is recovered anyway on expansion. The quantity of heat added by combustion is fixed by the richness of the fuel; consequently the more highly compressed charge, by being expanded five times against the other's two, will have a temperature at the end of expansion considerably below that of the slightly compressed gas; and the work done on expansion, over and above that required to compress the gas, is correspondingly greater. Anyone who has studied gas engine indicator cards knows that the average explosion pressure in a high-compression engine is a great deal higher than that in a very low-compression engine, and the excess of this average pressure over the average compression pressure is an exact measure of the work done. The low compression engine discharges its gases at a high temperature because they have not been expanded sufficiently to convert into work the energy represented by the heat added on combustion. The practical limits of compression in a gasoline engine are found, first, in the fact that highly compressed gasoline vapor explodes spontaneously, or burns with undue rapidity in the presence of hot metal or carbon particles; second, in the greater leakage and greater wear and tear involved in the use of high pressures. Practically no advantage has been found in carrying the compression of motor car engines higher than 70 or 75 pounds gauge.

BEARING SAFETY FACTORS

Philadelphia, Pa.—Editor Motor Age—At the works of the Hess-Bright Mfg. Co. in this city visitors may see a most interesting machine. This measures the frictional resistance of bearings and also determines their ultimate load-carrying capacity. While any form of bearing—plain, roller or ball—may be tested out, it is primarily used in testing out ball bearings to



make sure of the maintenance of the standard the Hess-Bright people have set themselves. This machine will measure the frictional resistance of a ball bearing that is radially loaded up to 15,000 pounds, and will do that within 98 per cent accuracy. It will measure the friction incident to a thrust load up to 10,500 pounds, and with an accuracy not under 99.5 per cent; or bearings may be subject to combined radial and thrust loads in any desired ratio within these limits and at speeds ranging from 50 to 2,200 revolutions per minute. Recently bearing 308 was put through a course of sprouts. As this is a size which is much used in motor car hubs, change gears and transmissions, an account of these tests may prove of interest. The bearing has a bore of 1.57 inch, a diameter of 3.54 inch, a width of .91 inch, and has eight balls of 9-16-inch diameter, separated by the elastic separators characteristic of HB-DWF construction. The races have the full supporting capacity of the curved cross section, not reduced at any point by change in such cross section incident to ball-filling openings. Radial load was started at 800 pounds and increased by 40 pounds increments to a total of 13,200 pounds. This test occupied 10 hours' running time. The speed was 250 revolutions per minute, corresponding to 24 miles per hour in a wheel hub for 32-inch tire. Examination showed races and balls in perfect condition. In the second the radial load started at 800 pounds, and in 4½ hours raised by 40 pound increments to 11,000 pounds, at which load it was run for 7½ hours at 325 revolutions per minute, or 31 miles per hour, in a 32-inch wheel hub. Measurement by balls by micrometer reading to 10-1,000 of an inch showed no change in size. The total radial freedom was .00045 inch and the total axial freedom .007 inch, both being within the limits of a new bearing, showed no measureable wear. According to HB practice bearing 308 is, in a motor car hub, not subjected to more than 1,000 pounds radial load. As the bearings stood loads of 13,200 and 11,200 pounds without developing any damage, they are shown to possess more than a tenfold reserve factor.—Henry Hess.

THAT POPPING NOISE

Lebanon, Pa.—Editor Motor Age—I notice in the February 23 issue of Motor Age Graham Roberts, of Mexico, wants to know the reason of that popping noise when he starts his single-cylinder Cadillac motor. And I notice the reason for that popping noise was in the carbureter, which is not correct. That popping noise is made by the sticking of the exhaust valve, and the remedy to prevent that is to take out the spark plug and squirt coal oil down along the exhaust valve stem and take a screw driver and work the valve up and down until it becomes loose. This valve has a long bearing and this bearing becomes carbonized at the upper end, hence



the sticking and consequent popping. The single-cylinder Cadillac has one of the best carbureters on the market for that kind of engine, and it is not possible for any firing in the carbureter, as no gasoline remains in the carbureter after the engine has drawn in its required charge, because it has no float, merely a disk and needle valve which shuts off the gasoline instantly after the charge is drawn into the combustion chamber and then both valves should be closed. But the exhaust valve remains open far enough so that when the engine fires part of the charge escapes too soon. All that is necessary is to clean the valve stem and that pepping noise will at once cease.—John H. Cilley.

SELDEN'S PATENT

Dayton, O.—Editor Motor Age—Kindly publish the date of the Selden patent, as well as the serial number, so I can find it in the patent records here.—J. E. Swope.

The number of the Selden patent is 549,160. It was granted November 5, 1895, and gave George Selden the right to make and sell his device for a term of 17 years.

BOOK ON MOTORS

Plymouth, Ind.—Editor Motor Age—Can Motor Age give me the name of the publisher of a book dealing on the advancement in motor car construction? I would like to get a book that describes the cars made by the pioneer manufacturers.—Fred Kuhn, Jr.

Paul N. Hasluck's "The Automobile," published by Cassell & Co., New York, and "Motor Vehicles and Motors," by W. Worby Beaumont, published by J. B. Lipincott, Philadelphia, are books of this character.

HOT OR COLD ENGINES

London, Eng.—Editor Motor Age—There has been much discussion as to whether an engine should run better cold or hot. With a correctly designed engine there is not the least question but that it should give more horsepower while running at a fairly high, rather than a low, temperature. With a badly designed engine, however, the horsepower sometimes falls off, or fails utterly when the engine becomes hot, because the faulty design of the engine causes distortion or pre-ignition owing to individual parts becoming overheated. Some interesting tests have been carried out on the six-cylinder Napier engine, with temperatures of the waterjacket varying from 56 degrees Fahrenheit up to 212 degrees Fahrenheit. These tests show clearly that as

the temperature of the water in the jacket increases, so the brake horsepower increases and the gasoline consumption decreases—at any rate this is the case up to a certain point. Briefly, therefore, other things being equal, the hotter the engine is kept, the more horsepower it will develop, the less gasoline it will use and the less it will cost to run. About 150 degrees Fahrenheit appears to give the best results. The tests in question were carried out on a 30-horsepower six-cylinder car and throughout the tests the engine speed was kept constant, or as near constant as possible, at 1,100 revolutions per minute. The engine was in every way standard, but obviously there was no attempt made to obtain the maximum horsepower the motor was capable of developing; the question being rather to ascertain what horsepower could be obtained at 1,100 revolutions under varying conditions of temperature in the waterjacket. The results show that the greatest horsepower and the lowest gasoline consumption coincided, while the temperature of the waterjacket stood at 149 degrees Fahrenheit. The results further show that with a temperature of 149 degrees Fahrenheit in the waterjacket the brake horsepower was greatest, while a fall in temperature of 56 degrees Fahrenheit in the waterjacket showed the remarkable loss of 6.6 per cent in brake horsepower. The next column shows the results obtained in gasoline consumption. At a temperature of 149 degrees Fahrenheit the consumption was lowest, and at a temperature of 56 degrees Fahrenheit the consumption of gasoline and consequent cost of running shows an increase of 11.5 per cent, whereas at this temperature the horsepower showed a loss of 6.6 per cent in brake horsepower. The tests were carried out on a 4 by 4-inch six-cylinder engine.

| Waterjacket Temperature | B. H. P. | Gasoline Consumption |
|-------------------------|------------|----------------------|
| 149° F..... | Highest | Lowest |
| 212° F..... | 1.0 % less | .55% more |
| 186° F..... | .66% less | 1.38% more |
| 115.7° F..... | 3.64% less | 4.8 % more |
| 56° F..... | 6.6 % less | 11.5 % more |

These demonstrations seem to afford an interesting field for discussion. I give results obtained and leave the matter there.—S. F. Edge.

REVOLVE BOTH WAYS

New York—Editor Motor Age—I beg to call the attention of S. H. O., "Will Not Work," in issue of January 30. If he will use some arrows showing direction of rotation, he will find that the sliding roller and the idler revolve in opposite directions. The idler cannot be keyed to the shaft and no doubt never was intended to be. Such being the case, the idler need not be slidable. It also looks very clear to me that S. H. O. intended to take power off the cross shaft, as he calls the rear disk "loose disk."—Edwin Archer.



Among the Makers

Diamond Branch Moves—The Pittsburg branch of the Diamond Rubber Co. has been moved from 16 Wood street to 6122 Center street, east end.

From Knox to Rambler—E. L. Thrasher, formerly manager of the Philadelphia establishment of the Knox Motor Car Co., has allied himself with the local Rambler branch, under Manager William F. Smith.

Pittsburg News—The Wilkinsburg garage, of Pittsburg, is handling the Elmore car this year. Manager J. R. Newell has already sold three cars this year. The State Automobile Co. has decided to restrict its selling efforts this year to the Pullman car. F. C. Metz is manager of the company.

Now Selling Cars—The Indianapolis Automobile Co., of Indianapolis, which has formerly conducted merely a garage and repair shop, has decided to enter the selling field this season. It has secured the Indiana agency for the Cartecar, and expects to pay special attention to the commercial car manufactured by the Cartecar company.

Doubles Up—The Finch & Freeman Automobile Co., Indianapolis, has given up its building on East Ohio street in that city and in the future will make its headquarters with the Indiana Carriage Co., 27-33 North Capitol avenue. It will handle the Auburn and Leader. Last season the Finch & Freeman company succeeded the Hill & Beeson Automobile Co.

Hoosier in Trouble—On the complaint of the Warner Instrument Co. and other creditors, a receiver has been appointed for the Boyd Automobile Co., Indianapolis. The Warner company stated a bill of \$277.50 had long been due, and George E. Hume was appointed receiver. Last year the Boyd Automobile Co. had the Indiana agency for the Buick and Stevens-Duryea, but was succeeded a few weeks ago by the Buick-Losey Co. Action has been brought to have the receivership proceedings set aside.

Maxim Invents New Gun—Hiram Percy Maxim, formerly chief engineer of the Electric Vehicle Co., but now engaged in the manufacture of a line of light electrics with T. Wells Goodridge, has been granted a patent on a silent firearm, working on the principle of a muffler. Mr. Maxim received his inspiration for the construction of such a weapon while watching a motor car engine in action. If this weapon proves all it is expected to be, it doubtless will revolutionize warfare. Mr. Maxim is the son of Sir Hiram Maxim, the inventor of the rapid-fire gun which bears



PREMIER TESTERS BUSY AT INDIANAPOLIS

his name. The construction of these firearms will in no wise conflict with the production of the Maxim-Goodridge light electrics, which will be on the market shortly.

Pennsylvania Sub-Agency—A sub-agency for the Pennsylvania car has been established in West Philadelphia, with Ray Passavant, of the Western garage, by the West-Sullivan Motor Car Co., Philadelphia agent.

Another Pope Rumor—It has been rumored in Indianapolis for some time that a company was being organized to take over the Waverley plant of the Pope Motor Car Co., in that city. The plant manufactures electric vehicles exclusively and has been doing a good business for several years. It is understood the local company would expect to make it a stock concern.

Premier Testers Busy—That the Premier Motor Mfg. Co. has not been idle during the winter is evidenced by the accompanying photograph. This establishment has been keeping a large force going all winter and has even been working nights for several months. Its corps of testers has been making daily runs, and the photograph shows one of them out on the roads in the snow several inches deep. No attention has been paid to the severe weather conditions, as the company has been, it is said, having an unusual demand for cars at this season of the year, and in order to meet the demands of its customers cars are constantly being kept in test by its drivers.

Body Plant for Maja—The Maja Co., of England, has obtained control of Sayer & Co.'s body-building plant, situated at 90 Wandsworth road, Vauxhall, London, S. W., and will in the future use this shop exclusively for the building of bodies for Maja cars. The plant consists of about twenty departments, covering the production and finishing of almost every style of body. About 500 workmen are employed. A number of notable jobs has been done in the Sayers shop, one in particular being the construction of a large body seating twelve, built on a special chassis. This car was ordered by an East Indian prince. Not only did the woodwork have to be of teak and mahogany, to withstand climatic conditions, but the car had to be so built that persons of several different castes should not be compelled to ride in close proximity.

and Dealers

This was accomplished by having removable partitions built and placing three entrances, two side and one rear, in the very large tonneau which was fitted to the chassis.

Is Cameron Sales Manager—H. W. Doherty, formerly of the Corbin Motor Vehicle Corporation, of New York, has been appointed sales manager of the Cameron Car Co., and will handle the output of the Brockton and Beverly factories.

Bailey Back from Europe—C. J. Bailey, of Boston, inventor of the Bailey tread for tires, has just returned from a trip to Europe, during which he visited the shows and inspected many factories, particularly ones devoted to tire making.

Tugby With National—The National Motor Vehicle Co., Indianapolis, has obtained the services of John Tugby, Niagara Falls, N. Y., who will take charge of part of the eastern territory. Tugby formerly was salesman for the Thomas company in Buffalo.

Guarantees Bearings—President Hess, of the Hess-Bright Mfg. Co., is now issuing an iron bound contract guaranteeing all ball bearings manufactured by his company for a period of 3 years. This contract is issued to the individual car owner through the authorized agents and dealers.

Wayne Activity—During the week just passed there has been considerable activity at the plant of the Wayne company in Detroit, and additions made to the working force. The company will continue to add men to the force right along, so that in a very short time the plant will be running in full force. "Everything in the future looks bright," said General Manager Barney F. Everitt, "and we expect to make just as many cars as we planned last fall. As a matter of fact we will have to buy considerable material to get out the orders we have right now."

Proposed Patent Law Change—The congressional committee on patents will shortly give a hearing on the proposition to incorporate in the patent laws of the United States a drastic provision that no foreign inventor shall be allowed to take out a patent in this country unless he manufactures and produces here the patented article in question. In practically all other countries there is a law in effect providing that citizens of the United States shall not be granted patent rights except that they manufacture their patented article in the countries in question. But any foreigner at present can come to the United States and take out a patent. Consequently this one-sided discrimination against American inventors by foreign countries

is looked upon by Chairman Currier and his associates on the committee and by a great many members of the house as extremely harsh.

Change of Location—David O. Eaton, Philadelphia representative of the Rapid Commercial vehicles, has removed his sales-rooms to 312 North Sixteenth street.

Haines in New Jersey—Fred G. Haines, who has been with the Corbin Motor Vehicle corporation for the past 4 years, has accepted a position as manager for W. S. Maltby, the New Jersey distributing agent for Corbin cars.

Suit Started—The Metallic Rubber Tire Co. of Jersey City, N. J., has brought suit against the Hartford Rubber Works Co. in the circuit court of the United States, claiming an infringement on certain letters patent having to do with the improvements in vehicle tires.

Spring Company Moves—The Supplementary Spiral Spring Co., of St. Louis, has removed its office from 52 West Sixty-seventh street to the Motor Mart, 1876 Broadway. M. H. Cormack, formerly vice-president of the Standard Brake Co., is in charge of the office, and his territory includes the states of New York and New Jersey.

Making No-Shammy—Leo Dautel, a member of the Cleveland Automobile Club, is at the head of the newly-organized Austro-American Separator Co., of Cleveland, which makes the No-Shammy separator. This is a device for separating water from the gasoline and as its name implies the job is effected without the use of chamois skin commonly used in such devices, and which the promoters of the new device claim is not effective after the chamois skin has become thoroughly saturated with water.

Addition to Hub Colony—The Simplex Motor Car Co. has just been formed in Boston to handle the cars of that name. W. H. Woods is at the head of it. Mr. Woods was for a long time connected with the Napier company, both in Boston and New York. He has opened headquarters at 173 Huntington avenue. W. M. Hiliard, the holder of the record for the climb to the clouds, is to be salesman and demonstrator for the company. He formerly worked for Mr. Woods when the latter had the Napier, and was later with the Harry Fosdick company.

Making Bodies, Too—Another department is to be added to the Kissell Motor Car Co.'s plant at Hartford, Wis. The company is now preparing to manufacture the bodies, and this means an addition to its plant. A part of the woodwork factory of the Hartford Plow Co. will be turned over to the use of the Kissell people for a time, and this will give them the necessary space. Zimmerman & Sons, of Waupan, Wis., made about one-third of the bodies last year, and the remainder was made by the Abresh company in Milwaukee. All of the painting

and upholstering will be done at the home factory at Hartford. It is said several new buildings are to be planned for erection by the Kissell company.

New Lozier Agent—The Blue Ribbon Auto and Carriage Co., of Bridgeport, Conn., has been appointed Lozier agent for the section of Fairfield county east of Greens Farms and North Wilton.

Buys a Janesville Shop—Frank Randall's machine shop and garage at Janesville, Wis., has been purchased by Rollin Lewis. William Alderman, an expert machinist, will be connected with Mr. Lewis. The new firm has the agency of the Ford.

Ford Branch to Move—The Philadelphia quarters of the Ford company will during the next fortnight be removed to the new building, now practically completed, at 250-252-254 North Broad street. Pending the putting on of the finishing touches Manager Louis C. Block has established an office in the building of the Firestone Rubber Co., next door.

Indianapolis Prospering—Indianapolis factories are busier than they have been for several weeks. Their forces are being added to daily and cars are being shipped out on orders as quickly as completed. Nordyke & Marmon have increased their force during the last week; the Overland plant, under the new management, is working a large force and the Premier Motor Mfg. Co. is operating its factory full time. Other plants are busy and the last signs of the financial troubles are vanishing.

Maxim Nearly Ready—The first of the new Maxim-Goodridge light electrics is about completed, and as soon as the roads permit it will be run over the road from New Haven to Hartford. The body was built in New Haven and is now receiving a few finishing touches. Messrs. Maxim and Goodridge have received numerous inquiries about their new car, which will shortly be placed on the market. Agencies throughout the country will be established in due course. A feature of this new machine is the worm drive, which is claimed to be antifriction to a great extent. Announcement of the mechanical details will be made later.

Columbia Crisis Approaching—In a short time, it is said, the crisis will be reached in the affairs of the Electric Vehicle Co., which is now in the receiver's hands. The Hartford shop resumed operations on a small scale early last week, and the work of the men employed is chiefly the assembly of cars from parts made before the plant closed down last December. Receiver Nuckols says reorganization is practically impossible for the reason that the bondholders will not advance the necessary capital. Another source declares the bondholders will bring about the climax in short order by foreclosing at an early date. The assets of the company, according to the recent inventory, approximate close to \$1,800,000, so when disposal is made of it the bondholders will of course

realize something. The Electric Vehicle Co. is a New Jersey corporation, but action no doubt will be brought in the superior court of Hartford county.

Takes Mora Also—The Morrison & Price Co., agent in Boston for the Wayne and the Rainier, has closed with the Mora company for the local agency for that car.

Schacht Agency in Chicago—The Schacht Mfg. Co., of Cincinnati, O., has opened up a Chicago agency at 1420 Michigan avenue, where it is showing a full line of Schacht runabouts. The new agency is in charge of Walter S. Crain.

New Northern Agents—The Northern Motor Car Co. is rapidly closing arrangements for 1908 agencies. Among those closed during the last 10 days are the following: H. M. Jarboe, Carrollton, Mo.; Bert Nelson, Bennington, Kan.; W. H. Thompson, Junction City, Kan.; Colonial Motor Car Co., Springfield, Mo.; White Garage, Oakland, Cal.

Got the Order—E. P. Blake, the New England agent of the Jackson cars, got an order in a novel way last week. Dr. Alfred C. Smith, of Brockton, wrote Mr. Blake and said if the latter would take him from Brockton to Boston in one of his runabouts inside of an hour, with the roads in the present heavy conditions, he would purchase a car. Mr. Blake accepted the offer and landed Dr. Smith at the Boston show within the time limit Saturday, and got an order for the car they rode in, the machine to be delivered after the show is over.

Reed in the West—W. G. Reed, who has been connected for several years with the government at Washington as consulting and designing electrical engineer in the navy department, has been at the home plant of the Elastic Tire Filler Co., at 52 Church street, Boston, for the past week, making ready for shipment a filling plant which he will run in Chicago, having arranged to control a large western territory for Elastic filling. Mr. Reed will leave for Chicago this week, and expects to have a plant and office sales rooms on the row. As soon as possible, Mr. Reed expects to establish filling plants at other western points.

More Injunctions—The Rushmore Dynamo Works, of Plainfield, N. J., asserts injunctions have been issued by the United States circuit court, southern district of New York, against the General Auto Supply Co., the Manhattan Storage Co., and the Manhattan Screw and Stamping Works, forbidding them to make or sell gas lamps in colorable imitation of the Rushmore Flare Front headlights and searchlights, or to use the words "flare front" or "Rushmore" in describing their product. This is in addition to injunctions already issued against the Motor Car Equipment Co. and the Manhattan Lamp Works, against which latter concern the first or test case was decided by the issue of a permanent injunction.



EDGAR APPERSON IN JACKRABBIT, STAR IN PASADENA CLIMB

Record Registration—Over 8,700 motor car licenses were issued by the state highway department of Pennsylvania in the month of January, breaking all previous records.

Wins Swedish Road Race—Salmson in a 28-40-horsepower Fiat won the coupe d'Hiver, promoted by the Swedish Automobile Club over a course from Gottenburg to Stockholm, a distance of 315 miles, which he covered in 23 hours 42 minutes 50 seconds. A Star, Beckman and Darraq also competed, finishing in the order named.

Prize for Briarcliff—E. V. Hartford, president of the Hartford Suspension Co., makes an offer to drivers of a prize of \$200 in cash or in the form of a trophy, to be awarded the driver of the winning car in the Briarcliff race if it is fully equipped with the Truffault-Hartford shock-absorbing device. A letter to this effect has been sent to the promoters.

Rounds Out Record—The Franklin car, whose motor ran continuously for 18½ days at Cincinnati, was run from that city to Syracuse in 4 days. In some places the road was invisible for miles, being covered with anywhere from an inch to 6 inches of water. It took from 8 o'clock Sunday morning till 8 o'clock Monday morning to go the 290 miles from Cincinnati to Cleveland. From Cleveland the car started immediately for Buffalo. On this lap arctic weather was encountered. In many places the drivers had to get out and shovel a path for the car. In one place between Cleveland and Buffalo drifts were encountered almost as difficult of passage as those through which the transcontinental tourists were hauled by aid of horses. All the way from Buffalo to Auburn the snow was heavy, but the Franklin made its way successfully and at noon on Wednesday, March 4, pulled up, mud-covered and battered, before the factory

which it had left, all new and shiny last fall. The tourists were given an ovation in Syracuse. The non-stop car is to be repainted and shipped back to Cincinnati to be used as a demonstrator.

Will Endow a Bed—In raising funds for the endowment of a bed in the Garretson hospital, Philadelphia, the Quaker City Ladies' Motor Club decided at its meeting last Thursday to ask the co-operation of its namesake organization, the Quaker City Motor Club. The bed will be for the exclusive use of victims of motor car accidents, it is stated.

Hartford Arranges Contest—Discussing the forthcoming endurance contest of the Hartford Automobile Club, a joint committee meeting representing the club and the Automobile Dealers' Association decided that the Middletown, Waterbury and New Britain course should be utilized, two circuits of which would make a run of approximately 200 miles. Each car must carry its full quota of passengers, who must weigh at least 125 pounds each. In the case of a touring car having extra seats these must be occupied. The club has offered two cups and two local newspapers one each. There will be no class events in the run.

Rambler Strength—Three middle western states, wherein registration lists have been compiled recently, have given the Rambler a comfortable lead over all others. Registration figures from the state of Nebraska show there are 2,211 cars in use there and more than 10 per cent of these are Ramblers. While the Rambler leads with 225 machines, the others range from 210 for the second to ninety-seven for the seventh on the list. Wisconsin and Illinois also gave the Rambler a good lead when the registration lists in those states were compiled. Illinois has 9,799 cars, of which 738 are Ramblers. Wisconsin has 3,852, of which 477 are Ramblers. The second high-

est in Illinois has eighty fewer than the Rambler and the second highest in Wisconsin has 454. Twelve thousand Ramblers are now in daily use, according to Thomas B. Jeffery & Co.

Apperson's Hill Win—In climbing the Pasadena hill, 1.4 miles in length, in 1:36¼, an average of 52.4 miles an hour, the Apperson Jackrabbit smashed the previous record of 2 minutes 14½ seconds, made a year ago by a Packard. Edgar Apperson drove the Jackrabbit.

Long Trip Over—Jason de Silvie, the representative of the Stoddard-Dayton company, is back again in Beloit, Wis., after a trip of more than 30,000 miles in a motor car. De Silvie started from Beloit in May, 1907, and has been from the eastern to the western part of the United States and has visited most of the larger cities on the way. The giant Warner Autometer has been perched on top of the Stoddard-Dayton all of the way and when Beloit was reached on the return the instrument registered more than 30,000 miles. De Silvie showed officials in the different cities how quickly a motor car could be stopped that was traveling at the rate of 15 miles per hour. The driver of the machine says the worst roads of the whole trip were found at the very end, between Chicago and Beloit.

Elmore Economy—From a list of Elmore owners in Detroit, sixteen persons were selected for the purpose of investigating the maintenance expense of the Elmore two-cycle valveless cars. The results showed sixteen persons had traveled 132,650 miles and in covering that distance had expended for upkeep expenses \$26.95, it is claimed. This means that to operate those Elmore cars it cost but a little over 2-100 cent per mile, or in another way it cost 2 cents for every 100 miles driven. In the case of Dr. Kiskadden, who drove his car 6,500 miles in a year, the total repair bill was only 5 cents, it is said. The greatest cost was reported by J. J. Miller, who in 5 years drove his car 18,000 miles at an expense of \$5.90. The persons selected by the Detroit agents were representative owners, and selected at random by the agents. The list, showing the mileage, years in use and repairs, is as follows: Dr. E. B. Smith, 12,000 miles in 1 year; expense, \$1.05. Dr. E. S. Kiskadden, 5,500 miles in 1 year; expense, 5 cents. Charles W. Munz, 4,800 miles in 1 year; expense, 50 cents. Dr. F. W. Young, 5,000 miles in 1 year; expense, 10 cents. J. H. Smith, 8,500 miles in 2 years; expense, 75 cents. Miss Mabel Wright, 7,200 miles in 1 year; expense, \$1.35. W. H. Allen, 7,000 miles in 1 year; expense, \$1.60. W. F. Barr, 4,750 miles in 1 year; expense, \$1.10. M. Caley, 8,000 miles in 1 year; expense, \$1. John Trost, 8,200 miles in 1 year; expense, 50 cents. F. Peckencher, 10,000 miles in 2 years; expense, \$5.75. Nat Heldreth, 6,200 miles in 1 year; expense, 25 cents. J. J. Miller, 18,000 miles

in 2 years; expense, \$5.90. Perry Hibbard, 3,500 miles in 1 year; expense, 50 cents. Thomas M. Van Loch, 14,000 miles in 3 years; expense, \$4.75.

Hawaiian Reliability—The Hawaiians have had another reliability run around the island, nine cars competing and a White steamer, two Buicks, a Maxwell and a Franklin returning perfect scores.

Won by Rolls-Royce—A cable from Bombay from F. J. Norbury, the owner of a 40-50-horsepower six-cylinder Rolls-Royce car, states he has been successful in winning the annual reliability trial of the Motor Union of Western India, having completed the whole distance of 620 miles without a single involuntary stop. The car only used $\frac{3}{4}$ gallon of oil for the 620 miles, which include climbing six lots of mountain passes having a total rise of 5,000 feet.

New Antipodean Record—C. B. Kellow and H. B. James have recently smashed the Melbourne-Sydney record in a 15-20-horsepower Dunlop-shod Talbot, doing the 577 miles in 25 hours 40 minutes, although the actual driving time was under 20 hours, an average of better than 28 miles an hour. The tires went through without mishap and the only damage to the car was the loss of a nut off a spring shackle. The previous record was 3 days. On the Talbot trip the thermometer ranged from 106 to 115 and on three occasions it was necessary to back up steep gradients because the gasoline tank being so low it could not supply the fuel on the heavy grades. The antipodeans regard the feat as a wonderful performance.

Motoring Under Difficulties—A spring-like day, with the temperature above 60, last Friday melted the accumulated snow and ice on the streets of Detroit so suddenly the drains were unable to carry the torrents off the streets and the low sections were inundated. Several of the main thoroughfares were so flooded the street car service was abandoned. The only traffic which continued was that by high wagons and motor cars. The testers of the Packard Motor Car Co. drove to the small lake which had formed on Jefferson avenue and mingled with the several wagons then in service carrying street car passengers from one side to the other. Here the inundation spread for nearly $\frac{1}{2}$ mile and the large crowd which had collected was much impressed by the way in which the motor cars plowed steadily back and forth through the water up to the floor boards. The Detroit News, of the next morning, described the scene as follows: "Through the lake on Jefferson avenue horses and wagons plunged, the bellies of the animals awash at times, the wagon boxes a few scant inches above the flood. Motor cars from the city plunged in to the hubs, stopped and backed out to seek another way to reach the territory beyond. Few machines dared attempt the passage. The Packard people took advantage of the novel conditions to test their cars. One

took up a station in the middle of the lake and a photographer snapped pictures of the second car as it made trip after trip through the high water, which almost buried the engine."

Want More Room—The quarters of the Wilkes-Barre Automobile Club in the building of the Franklin Club, a social organization, at Wilkes-Barre, Pa., are proving much too small for the purposes of the motorists, and plans are being discussed for the acquisition of a separate building of their own. Many of the members favor the erection of a specially designed clubhouse for the organization.

Quaker City Committees—President Folwell, of the Quaker City Motor Club, of Philadelphia, has announced the chairmen of several of his most important committees, as follows: Membership, A. T. James; house, Frank Hardart; auditing, L. D. Berger; law, G. Douglass Bartlett; contest, Richard Sellers; good roads, E. H. Lewis; press, J. R. Overpeck. The Walton hotel management has consented to inaugurate a daily 75-cent gasoline luncheon.

Climb Goes to Rambler—A telegram to Motor Age from Los Angeles Wednesday announces the officials of the Pasadena hill-climb have decided the protest made by the Rambler and have corrected the mistake in time. The revised figures give the Rambler 2 minutes 27 seconds and with it the victory in this class, which originally had been awarded to the Pope-Hartford. The evidence submitted showed a mistake of 1 minute had been made by the timers.

Towns to Be Labeled—If the plans of the postoffice department are carried out it will no longer be necessary for motorists on tour to ask the name of a town. The 70,000 postmasters of the United States are to be urged to add to the words "post-office" on the signs which designate their respective offices the name of the town or hamlet in which the office is located. Such signs for offices of the fourth class, numbering more than 60,000, will be installed at the expense of the postmaster or his fellow-townsmen, as the postoffice department has no appropriation for that purpose.

It is believed, however, that postmasters generally will comply. The files of the department contain numerous requests from motorists for the action that is proposed by the department.

Another Royal Favor—Upon the Swedish Automobile Club has been conferred the title of Kungl Automobil Klubben by King Gustav V. The king also has given the club authority to adorn its badge with the royal crown.

More World's Records—World's records made at Brooklands February 19 by Newton in a 60-horsepower Napier were as follows: Fifty miles, 35 minutes 7.36 seconds, an average of 85.412 miles an hour; 100 miles, 1 hour 10 minutes 20.31 seconds, an average of 83.308 miles an hour; 150 miles, 1 hour 46 minutes 6.17 seconds, an average speed of 84.82 miles an hour; 1 hour, 85 miles 555 yards; 2 hours, 169 miles 615.6 yards.

Michener Will Drive—A 45-horsepower chain-drive Lozier will be driven by Harry Michener in the 360-mile stock car race at Savannah. Owing to the fact Michener will drive in the Briarcliff it was thought he would not have time to compete in the Savannah races, but arrangements have been made so he can return in time to go in training on March 24. The car he will drive will be the stock model which he drove at Morris Park and Brighton Beach.

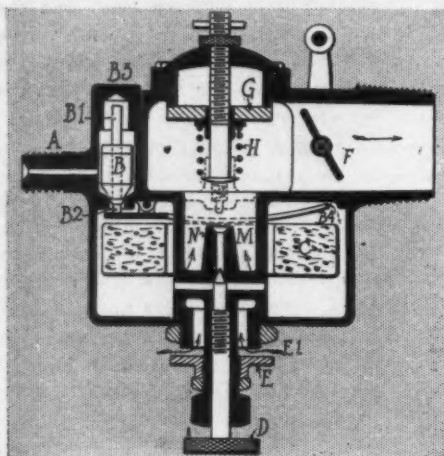
Lozier's Economy Record—"In the economy contest of the Long Island Automobile Club, February 25, 246 miles, as shown by the speedometer on the Lozier car, the published reports gave the fuel consumption of the Lozier 45-horsepower car as 27 $\frac{1}{4}$ gallons," writes C. A. Emise, of the Lozier company. "This is incorrect, as the official report of the committee shows 25 $\frac{1}{4}$ gallons. This makes quite a change in the result, as from the official record it will be seen that the big Lozier car carried seven passengers practically 10 miles for every gallon used. The car carried a full equipment of tires, tops and supplies, and was one of the three highest-powered cars in the contest. The others all having small motors, naturally had a smaller gasoline consumption."



PACKARD CAR USED AS FERRY ON FLOODED STREETS IN DETROIT



Development Briefs



VIEW OF THE OBERDORFER CARBURETER

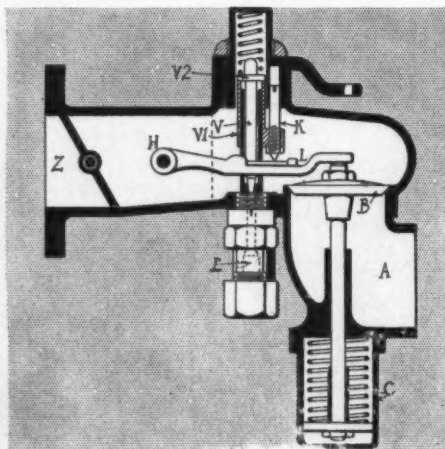
THE DURYEA CARBURETER

Charles E. Duryea, the American pioneer in motor car construction has as his latest endeavor in the work brought out the Duryea carburetor which is marketed at his home town of Reading, Pa. The sectional illustration shown herewith tells the brief story of the device which is very simple: It is without spring-controlled auxiliary air valves or springs of any nature. The size of the incoming air passage as well as the height of the needle in the gasoline spraying nozzle is automatically controlled by the speed of the motor. Air enters at A and mixture exits at B, the gasoline being picked up midway at the nozzle M1 placed in the lowest point of the mixing chamber which is a tube with a slightly inverted arch. Gasoline enters by way of the connection M and escapes through the nozzle M1 in which is the needle valve D which is raised as more air enters and lowered as the air supply diminishes. The regulation of the air and gasoline to suit the motor needs is briefly as follows: The suction of the motor through the mixing chamber A-B lifts the piston E because of pulling out part of the air above it, there being sufficient room between the piston and the walls of the containing chamber to permit of this. Lifted with the piston E is the tube D1 hinged to the bottom of which is the arch-shaped air valve C which obstructs the air passage A-B. A connecting link G slides in a slot G1 on the top of the piston E and has its top end secured adjustably at M to a screw K. The raising or falling of the piston E raises or lowers the link G which as it spans the spiral portion of the needle valve F compels it to turn in its threading in the cap L thereby raising or lowering it—raising it when the piston E rises and vice versa. The exact amount of lift given to the needle valve can be varied by moving the attachment of the

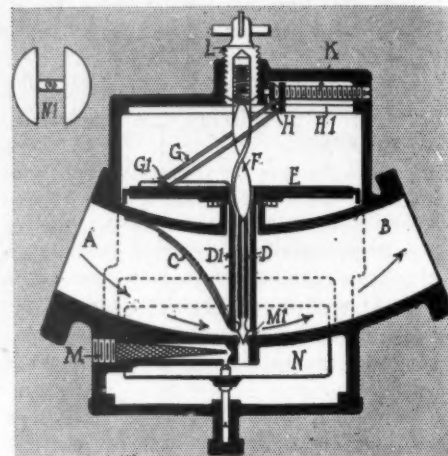
link G on the adjuster K. Should the attachment be slipped right at H1 then the spiral part of the needle valve would be about the middle of the link G and the lift to the needle valve would be half that of the piston E. In the illustration the spiral passes through the link closer to the attachment H than to the point G1 so that the lift of the needle valve is not half that of the piston E. By raising or lowering the cap piece L into which the top of the needle valve F threads a still greater range of lift can be had on the needle valve. The float is marked N and a cross section of it N1.

THE OBERDORFER CARBURETER

The accompanying illustration of the Oberdorfer carburetor made by the M. L. Oberdorfer Brass Co., Syracuse, N. Y., shows it to be of the concentric-float, central air opening, auxiliary air valve type; with the usual adjustments for the needle valve in the nozzle, the needle valve for regulating the flow of gasoline into the float chamber, the size of the normal air opening, the tension of the auxiliary air valve and the passage of mixture to the motor. With one exception all of these adjustments can be made from the outside without removing any parts, the only exception being in adjusting the height of the gasoline valve B on its stem B1, to do which the cover B3 must be screwed off and the valve lifted out. Once out the coned part B can be driven on its stem B1 so as to increase or diminish the part of the stem B2 which bears on the top of the lever B4 which arches over the top of the float C. The length of the arms of the lever B4 is such that the rise and fall of the needle B is just one-half that of the float C. The normal air enters as indicated by arrows E1, the size of the opening being regulated by raising or lowering the regulator E and locking it. The needle valve D does not rise to the tip of the nozzle N.



PETRE CARBURETER IN SECTION



SECTION OF DURYEA CARBURETER

THE PETRE CARBURETER

In the Petre carburetor manufactured by the Petre Carburetor Co., Cleveland, O., the needle valve in the spraying nozzle is raised and lowered every time the air valve through which the complete air supply opens and closes, the aim being to thereby proportion mechanically the amount of gasoline and air mixed at all motor speeds. How this is accomplished is shown in a section of the carburetor showing the mixing part of it, the float chamber having been eliminated. All of the air enters by the passage A and must lift the poppet valve B which when it rises lifts the needle valve V out of the tip of the standpipe E through which the gasoline enters from the float chamber. The lever L lifts against a pointed piece K which threads through an extension on the frame V1 which through a crosspin V2 supports the needle valve V. By raising or lowering the piece K the amount of lift given to the valve V can be changed for a given lift of the air valve B; raising K reduces the lift of V and lowering K increases it. The relative adjustment of these parts is determined by the running of the motor. The fulcrum H of the lever L, the point on the lever L where the piece K rests upon it and the point where the lever L bears upon the valve B are in a straight line, thereby giving a lift to the valve V in direct proportion to that on the air valve B. If the point K was halfway between the fulcrum H and the point where the lever L bears on the top of the valve B then the lift of the needle valve V would be one-half that of the valve B, but according to the illustration this is not the case, the lift on the valve V being less than one-half. A spiral spring normally holds the valve V seated. Z marks the butterfly valve throttle. In all other respects the carburetor operates on recognized lines; and is made in standard sizes.



Brief Business Announcements



Boston, Mass.—The Morrison-Price Co. has been appointed New England agent for the Mora.

Lansing, Mich.—The International Motor Co., of Detroit, has been incorporated with a capital stock of \$50,000.

Boston, Mass.—Alfred C. Morse has been appointed local agent for the Renault and will establish headquarters in the Motor Mart.

Philadelphia, Pa.—F. L. Hoover & Sons have been granted the contract for the garage to be built in Wyncote for C. H. K. Curtis.

New York—The Vanderbilt Cup garage has been incorporated with a capital stock of \$5,000 by E. D. Cronin, F. Knowlton and G. Whyard.

Springfield, Mass.—Gilbert H. Chaplin has secured the sub-agency for the Elmore cars, and for the time being will have an office in Witherell's garage.

Wilmington, Del.—A permit has been granted to G. D. Winslow to rebuild the garage of the Central Garage Co. at Eleventh and West streets, which burned down recently.

Columbus, O.—The Columbus Garage and Mfg. Co. has been incorporated and will deal in and repair motor cars. The incorporators are C. R. Hambleton, H. L. Thum and C. L. Brothard.

Springfield, Mass.—It is likely that a factory will be opened here for the manufacture of a recently invented flexible steel tire. H. E. and W. L. Barnett, of the Barnett Drop Forge Co., are interested in the new project.

New York—The Noslip Tire Protector Co. has been incorporated with a capital stock of \$15,000 and will engage in the manufacture of tire protectors. The incorporators are W. A. Shepard, C. B. Young and A. Houghton.

Brooklyn, N. Y.—Ellenbeck & Muller have assumed management of the Keystone garage at 912 Bedford avenue. William Ellenbeck was formerly the driver for Fire Chief Croker, while Mr. Muller was with Walter Christie.

Chicago—The Joseph McKeague Co., of 707 Chamber of Commerce building, has been incorporated with a capital stock of \$5,000 and will deal in motor cars and accessories. The incorporators are James J. Leahy, K. Neals and Justin McCarthy.

Cincinnati, O.—The Citizens' Motor Car Co.'s new garage at Seventh and Main streets is four stories in height and has accommodation for 500 cars, in addition to the office, sales rooms and machine shop. J. W. Richardson is the president of the company, and J. T. Tarbill is the vice president and general manager.

Philadelphia, Pa.—N. N. Deisel is to erect a three-story garage, 20 by 17 feet, at 5227 Market street.

Albany, N. Y.—The Automobile Dealers' Association, of Rochester, has been incorporated with a capital stock of \$500.

Philadelphia, Pa.—The Autolight and Motor Supply Co., of 506-508 North Broad street, has just completed a large addition to its building.

Madison, Wis.—The Earl Motor Car Co., of Kenosha, has filed an amendment to its charter, increasing its capital stock from \$25,000 to \$250,000.

New York—Announcement has been made that in the future the Pullman car will be represented in this city by Cimiotti Brothers, of 1845 Broadway.

New York—The Hartog Auto Co. has been incorporated with a capital stock of \$15,000. It will deal in motor cars. The incorporators are A. Hartog, S. B. Hartog and A. J. Cahill.

New York—The Vans Auto Tire Co. has been incorporated with a capital stock of \$1,000. It will deal in tires and accessories and will also manufacture motors, engines, machines, cars, etc. The incorporators are Frank Van Tassel, John Graham, both of New York city, and Frederick G. Herst, of Ritefield Park, N. J.



Hoboken, N. J.—Hudson Tire and Rubber Co., capital stock \$100,000, to engage in the manufacture of rubber tires for motor cars and other vehicles. Incorporators, A. H. Peterson, of 1170 Forest avenue, Bronx, N. Y.; Richard Shippey, 1217 Bloomfield street, Hoboken, and William Shippey, Convent, N. J.

Warren, O.—Valley Automobile Co., capital stock \$20,000. Incorporators, H. C. Farnham, A. W. Sykes and John H. Fuller.

Trenton, N. J.—Walden W. Shaw Co., capital stock \$30,000, to manufacture motor cars, vehicles, etc. The incorporators named are the attaches of the Corporation Trust Co., which is the agent for the company.

Babylon, N. Y.—Turbine Motor Co., capital stock \$12,000, to engage in the manufacture of gasoline motor boats and cars. Incorporators, Paul Krause, Joseph Covert and David Sandman.

Milwaukee, Wis.—Power Vehicle Co., capital stock \$25,000. Incorporators, G. L. Stephenson and T. C. Clarke.

Newark, N. J.—Star Motor Car Co., capital stock \$25,000, to deal in motor cars, etc. Incorporators, L. B. Harris and Paul F. Gillette.

New York—Stuyvesant Auto Garage, capital stock \$25,000, to deal in motor cars. Incorporators, L. G. and Thomas G. Buckley and F. I. Garney.

New York—Knickerbocker Taxicab Co., capital stock \$15,000. Incorporators, W. B. Hurlburt and S. J. Wise.

New York—Central Tire Repair Co., capital stock \$2,000. Incorporators, Frank Van Tassel and John Graham.

Philadelphia, Pa.—W. Plunkett Stewart is to erect a reinforced concrete garage, 22 by 50 feet, in Haverford.

Los Angeles, Cal.—The W. E. Bush Co., local agent for the Pierce-Arrow, has removed to 1227-1229 South Main street.

Boston, Mass.—The Taxicar Co. has been incorporated with a capital stock of \$300,000. The incorporators are H. F. Parker and J. A. Little.

Cleveland, O.—The Sweaney Auto Livery Co. has been incorporated with a capital stock of \$10,000 by G. F. Sweaney, Martin W. Saunders and H. W. Sprague.

Brooklyn, N. Y.—The Mitchell Motor Car Co., of New York, is now installed in its new garage at 912 Bedford avenue. D. M. Hasbrouck is the manager of the Brooklyn branch.

Philadelphia, Pa.—Application will shortly be made for a charter for a new concern to be known as the American Auto-Drive Co. The new company will manufacture and deal in parts for motor vehicles, including steam, gasoline and electric.

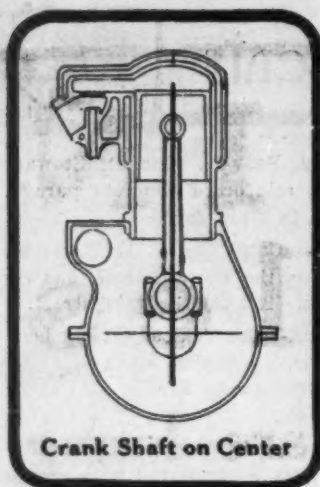
Trenton, N. J.—The Walden W. Shaw Co., of Jersey City, has been incorporated with a capital stock of \$30,000 and will engage in the manufacture of motor cars and other conveyances. The incorporators are H. O. Coughlan, L. H. Gunther and J. R. Turner.

Utica, N. Y.—The L. L. Leman Auto Top Co. has been incorporated with a capital stock of \$5,000. It will engage in the manufacture of tops, lamps, etc. The incorporators are William E. Kelley, of Clinton, and Lee L. Leman and George W. Griffith, both of Utica.

Brooklyn, N. Y.—Howard Drakeley, who was formerly connected with the Stearns department of Wyckoff, Church & Partridge, has associated himself with the Allen-Swan Co., of 1287-1289 Bedford avenue. This concern has the Brooklyn agency for the Stearns.

Detroit, Mich.—On petition of the Union Trust Co. Judge Murphy has appointed Victor N. Gurney receiver for the Reliance Motor Car Co. This is merely a step toward the proposed reorganization of the company with a larger capital. It is likely that the plant of the company will be removed to Lansing.

Chicago—The Times Square Auto Co. is now located at 309-311 Michigan avenue, but after April 1 will remove to the store now occupied by the Electric Vehicle Co. on Michigan avenue. The Times Square Automobile Co. has been incorporated with a capital stock of \$5,000, and will deal in cars and supplies. The incorporators are E. S. Hartman, Walter D. Taff and A. O. Bock.



Crank Shaft on Center

Rambler

Why the Offset Crank Shaft



Crank Shaft Offset

One of the greatest improvements in motor construction is the offset crank shaft.

Its advantages are positive and direct.

FIRST— By practically eliminating the dead center the efficiency of the motor is greatly increased through the greater leverage and more direct thrust from piston to crank shaft.

SECOND— Increased life of the motor through reduction of side thrust on cylinder walls and consequent saving in wear.

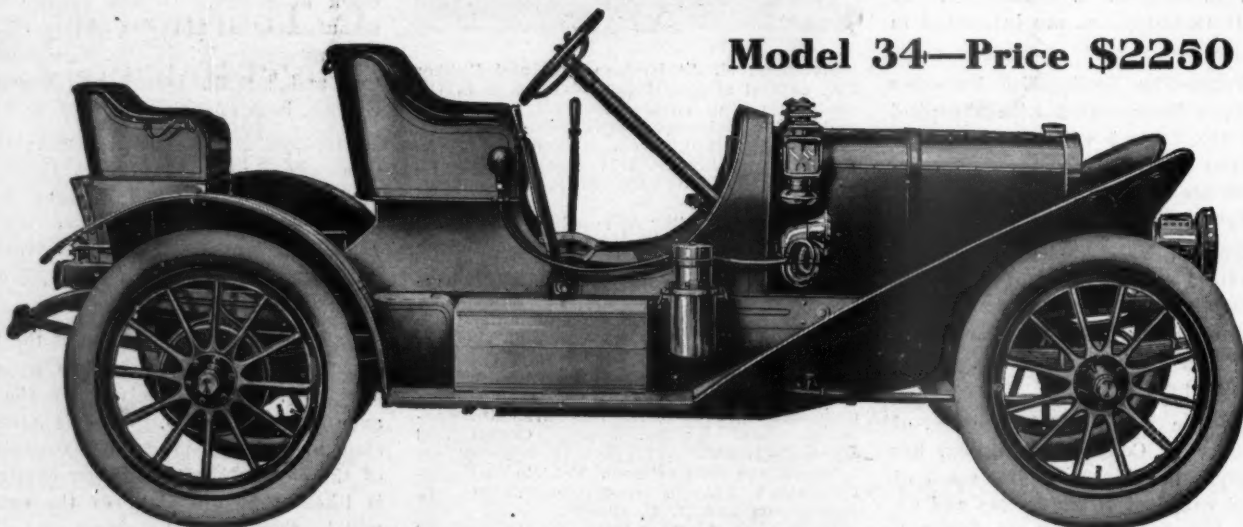
THIRD— Reduction in vibration and increased steadiness of running through more direct application of power generated in the cylinders.

Like many other fundamentally good features this must be done right and in the Rambler it is right both theoretically and practically and the result is a motor that combines the highest degree of efficiency with long life and economy of operation.

It is this and other features of equal value that make

The Car of Steady Service

Model 34—Price \$2250



This four cylinder chassis, equipped both as a 5-passenger touring car and 3-passenger roadster
Price of each style \$2,250. The Rambler Utility Car with double opposed motor, \$1,400

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